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ABSTRACT

This report deals with the problem of encouraging colleges to engage in educational research. More specifically, it concerns itself with questions such as: What is the present role of the small college? What roles can small colleges most effectively play in the continuum of research needs? What resources are necessary for playing these research roles? How do the existing college policies and resources relate to those needed for research productivity? What changes in college resources and procedures are required for research and how can they be efficiently made? More than at any time before, society is looking to educational institutions to solve its problems. However, a serious shortage of researchers presents little chance that solutions to society's problems will be found. The existing challenge to education cannot be met completely by training more researchers. In addition to increasing the research personnel, the practitioners and the community leaders must be encouraged to join hands with researchers in pursuit of the desired solutions. Without the cooperation of all educators and community leaders, there is little hope that education can meet the challenge. (Author/HS)

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CONSORTIUM
ON
RESEARCH
DEVELOPMENT

for the
State University Colleges
at Buffalo and at Fredonia, New York; and
Gannon College at Erie, Pennsylvania

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Naim A. Sefein

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FINAL REPORT

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CONSORTIUM RESEARCH DEVELOPMENT PROGRAM FOR THE STATE UNIVERSITY COLLEGES AT BUFFALO AND AT FREDONIA, NEW YORK AND GANNON COLLEGE AT ERIE, PA.

Naim A. Sefein

December 1970

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ACKNOWLEDGEMENT

A project as extensive and diversified as the one described in this report is not the product of one man. True, the Project Director is the one who put together the conceptions to form the Research Development Model and who wrote this report. But in the process of developing the Model, implementing its components and writing the report he received a great deal of help from many colleagues, administrators and consultants. To all those individuals the Project Director credits the strength of the Project. To himself he retains the responsibility for its limitations.

Several individuals and groups merit special mention. First, the Project Director acknowledges the role administrators of the three participating colleges whose approval and support made the project possible. Dr. Dallas Beal who at the inception of the Program was Dean of Education and Dr. Milton Klein who was the Dean of Graduate Studies and Research at Fredonia reviewed the original proposal and contributed many helpful remarks. They and Dean Simpson at Buffalo and Dean Scottino at Gannon were also regular participants at the Administrative Leaders' Seminars. Not only have they contributed long hours listening to various discussions, but they have tried to implement many ideas even when they were not fully convinced with their import. All in all they have lent a great deal of moral support to the Project Director.

Second, the Project Director feels indebted to his colleagues who acted as Research Development Officers at Buffalo and at Gannon College. They unselfishly contributed a great deal of effort to the implementation of the Program. Dr. John Dodd who was the Research Development Officer at Buffalo before leaving to Montana in 1969 conducted part of the evaluation and so did his successor Dr. Richard McCowan. Dr. Herbstritt, the Research Development Officer at Gannon was so much interested in the Program that he extended his effort to help other colleges around Erie at no cost to the Project.

Third, the Project Director owes a great deal to the consultants involved in the Project. Despite the modesty of the honoraria involved they spent an extensive amount of time and effort trying to implement the instructional model both in content and procedures, and put an endless amount of energy in the instruction and the advisement of various seminar participants. In addition to those individuals identified in the text of the report, the Southwest Regional Laboratory for Educational Research and Development requires special mention. It contributed one man-day consulting time and many instructional materials.

Finally, special credit must be given to Dr. John Sokol, the Director of Educational Research in Region II of the Office of Education. His extensive assistance and guidance throughout the project, both to the Project Director and to various faculty participants, was far beyond the call of duty. Indeed, it was a privilege to have Dr. Sokol as project monitor.

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENT ii

TABLE OF CONTENTS iii

LIST OF TABLES vi

LIST OF FIGURES vii

LIST OF APPENDICES viii

CHAPTER ONE: EDUCATIONAL RESEARCH AND SMALL COLLEGES 1

- I. Introduction 1
- II. Small Colleges and Research 2
  - A. The Traditional Role of Small Colleges 2
  - B. The Need for College Involvement in Research 3
- III. Changes Required for Research Productivity 5
  - A. Administrative Policies and Actions 5
  - B. Faculty Interest and Preparation 6
  - C. Educational Programs 7
  - D. Research Facilities and Resources 7
  - E. Coordination of Policies and Resources 8
- IV. Organization of the Report 8

CHAPTER TWO: A SYSTEMS SOLUTION TO RESEARCH DEVELOPMENT IN SMALL COLLEGES 10

- I. Systems Analysis and Problem Solving 10
- II. The Model for Research Development 14
  - A. Faculty Subsystem 15
    - 1. Problem Formulation 15
      - a. Issues of Concern 15
      - b. Subsystem Input 16
      - c. Subsystem Output 17
      - d. Assumptions 18
      - e. Constraints 19
    - 2. The Search for Relevant Information 19
      - a. Content of Training Program 20
      - b. Instructional Procedures 21
      - c. The Medium and Context of Training 22

Page

3. Problem Solution 23
    a. Characteristics of Needed Program 23
    b. Program Components 24
        Local Faculty Seminars 24
        Intensive Research Training Seminars 26
        Financial Support for Pilot Studies 27
        Consultant Services 27
    c. Target Population 28
B. Administrators Subsystem 29
    1. Problem Formulation 29
        a. Issues of Concern 29
        b. Subsystem Input 30
        c. Subsystem Output 32
        d. Assumptions 34
        e. Constraints 35
    2. The Search for Relevant Information 35
    3. Problem Solution 38

CHAPTER THREE: IMPLEMENTATION OF THE MODEL: THE CONSORTIUM OF RESEARCH DEVELOPMENT 40

I. Establishing the Consortium 40
II. Administering the Consortium 42
III. Implementing the Program 43
    A. Faculty Component 43
        1. Announcing the Program 43
        2. Organizing the Local Faculty Seminars 44
        3. The Intensive Research Training Seminars 45
        4. Funding Pilot Studies 48
        5. Supplementary Activities 51
    B. Administrators Component 53

CHAPTER FOUR: EVALUATION 55

I. Formative Evaluation 55
    A. How did College Faculty View Their Role? 56
    B. The Effect of the Administrators' Announcement 59
    C. The Attitudes Associated with Interest in Research 64
    D. Did the Faculty Seminars Fulfill Their Objectives? 67
        1. The Local Faculty Seminars 67
        2. The Intensive Research Training Seminars 70
    E. The Funding of Pilot Studies 71

Page

II. Summative Evaluation 73
  A. Did the Research Development Program Encourage Faculty Involvement in Research? 73
  B. Did the Research Development Program Affect the Desired Changes in Institutional Policies and Resources? 74
  C. Are the Outcomes of the Research Development Program Proportional to its Costs? 76

REFERENCES 77

LIST OF TABLES

Tables		Page
4.1	FACTOR LOADING OF CONCEPTS (VARIMAX ROTATION)	57
4.2	ROTATED FACTOR MATRIX OF SCALES (VARIMAX ROTATION)	62
4.3	SCALE CLUSTERS	63
4.4	DISTRIBUTION OF THE SD RESPONDENTS BY TIME OF ADMINISTRATION AND BY PARTICIPATION IN CORD	64
4.5	MULTIVARIATE ANALYSIS OF VARIANCE (56 VARIABLES)	65
4.6	SUMMARY OF SIGNIFICANT DIFFERENCES BETWEEN PARTICIPANTS AND NON-PARTICIPANTS IN THE RESEARCH DEVELOPMENT PROGRAM	66
4.7	OBJECTIVES RATED AS BEING ACCOMPLISHED IN THE LOCAL SEMINARS	69
4.8	ACHIEVEMENT GAINS IN THE SEVEN OFF-CAMPUS WORKSHOPS	70
4.9	PARTICIPANTS RATING WORKSHOPS AS MOST BENEFICIAL	72

LIST OF FIGURES

Figure Page

2.1 THE RELATIONSHIP BETWEEN DIMENSIONS OF SYSTEMS ANALYSIS PROCEDURES 12

2.2 THE VARIOUS COMPONENTS INVOLVED IN THE FACULTY SUBSYSTEM OF THE RESEARCH DEVELOPMENT PROGRAM 25

4.1 CONCEPTS PLOTTED WITH RESPECT TO THE TWO PRINCIPAL-FACTOR AXES 58

LIST OF APPENDICES

APPENDIX Page

A ANNOUNCEMENT OF CORD 80

B FORMS USED IN DEVELOPING LOCAL FACULTY SEMINARS 83

C DATA ON FACULTY RESEARCH TRAINING SEMINARS (WORKSHOPS) 87
1. Behavioral Analysis of Applied Research 88
2. Guidelines for Planning Faculty Research Training Workshops 98
3. Workshops Program and Evaluation Data 101

D MATERIALS USED IN FUNDING PILOT STUDIES 131
1. Guide for Submitting Research Proposals 132
2. A Checklist for Evaluating Research Proposals 134
3. Reviewer's Report Sheet 138
4. Procedural Guidelines for Recipients of Funds for Pilot Studies 140

E DATA ON ADMINISTRATIVE LEADER'S SEMINARS 143
1. Consortium on Research Development: Program Rationale 144
2. Handbook of Policies Affecting Faculty Involvement in Organized Research (An Outline) 150
3. List of Issues Discussed in the Seminars 154

F EVALUATION DATA 162
1. The Semantic Differential Instrument 163
2. CORD Participants' Survey - 1969 168
3. CORD Participants' Attitude Survey - 1970 174

CHAPTER ONE

EDUCATIONAL RESEARCH AND SMALL COLLEGES

I. Introduction

This report deals with the problem of encouraging colleges to engage in educational research. More specifically, it concerns itself with questions such as: What is the present role of the small college? What roles can small colleges most effectively play in the continuum of research needs? What resources are necessary for playing these research roles? How do the existing college policies and resources relate to those needed for research productivity? What changes in college resources and procedures are required for research and how can they be efficiently made?

The concern with research involvement by the small college is in part related to the major problem which education faces today, namely, that of meeting the needs of the society. More than at any time before, society is turning to education in search of solutions for its emerging problems. Since education does not have patented solutions to these complex social, psychological, and educational problems the solutions must be sought through research. Unfortunately, today education lacks the resources to launch the intensive research effort needed to find these solutions. The difficulty lies both in the shortage of researchers and in the attitudes which practitioners have toward research. The shortage of properly trained researchers represents the most serious problem. When research lacked support, many educators saw no need to prepare themselves with the skills necessary for conducting research. What is more, many of those who acquired some preparation in research techniques had to channel their interests to other professional matters. Without properly trained researchers there is little chance for the needed solutions to be found. Remedying this shortage in manpower is, however, not an easy matter.

The skeptical attitude practitioners have toward research and researchers represents another serious difficulty. In the past, research was often divorced from the needs of the practitioner. Researchers lived on the campuses of the large universities and dealt with theoretical topics. They made no effort to answer the problems of the practitioner. With time, the educational practitioner grew skeptical of the utility of educational research, and indifferent to the demands of researchers. Since the problems which educators are asked to study today are related to practice and must be studied in naturalistic settings, researchers must gain the cooperation and support of the practitioner. This, too, is difficult to accomplish.

In addition to the skepticism of the educational practitioner toward the utility of research in general, educational researchers face another problem. Schools are established by the community and remain under its control. With no research data available for the community to use in making decisions about the appropriate educational programs for its children, community leaders have had to depend upon their intuition and judgment. Convincing the leaders of the community to subject the product of their intuition to the coldness of empirical evaluation is another challenge for researchers.

To summarize, the existing challenge to education cannot be met completely by training more researchers. In addition to increasing the research personnel, the practitioners and the community leaders must be encouraged to join hands with researchers in pursuit of the desired solutions. As Keppel (1964) pointed out, the success of the research effort depends upon the concerted effort of all educators and community leaders. Without such cooperation, there is little hope that education can meet the challenge.

II. Small Colleges and Research

A. The Traditional Role of Small Colleges

Whether they evolved out of teacher training schools or originated as colleges for liberal arts, small colleges were traditionally committed to instruction and service. Research, whether in education or in any other discipline, was not expected. Even now, the environment most of these colleges maintain is essentially consistent with this traditional philosophy (Lazarsfeld and Sieber, 1964). More specifically:

1. Both administrators and faculty members are service-oriented. Faculty members who are interested in research either do not seek positions in these colleges or soon leave to join other institutions.

2. Instructional programs tend to be professionally-oriented. Even the graduate programs reflect the professionalization demands for permanent certification of teachers. Courses tend to be broad and prescriptive in content. Program requirements include a minimum orientation in the behavioral sciences, statistics, or research, and discourage specialization.

3. Faculty members are expected to play the role of experts. The atmosphere of learning is one of apprenticeship and imitation of models. Students learn practical techniques and time-tested methods from the experts rather than exploring and testing for solutions under faculty guidance.

4. Teaching loads are heavy and instructors are discouraged from specializing. Some instructors are expected to teach as many as four preparations in one semester.

5. Faculty members are expected to take a major role in supervising student activities. They are also expected to be involved in many clerical and administrative responsibilities.

6. Instructional and service programs are established on face validity alone. Seldom is provision made for the empirical evaluation of their effectiveness.

7. Resources are limited to those required for teaching. Libraries generally lack primary sources for research. Secretarial help is limited to instructional needs. Calculators, test scoring machines, and office space are limited.

8. Faculty reward is based on "productivity" in teaching and in community service. Research involvement is rarely acknowledged or rewarded. In cases where publishing is acknowledged, usually no differentiation is made between journalistic writing and research reporting.

9. Departmental budgets do not include provisions for research and funds for the support of faculty travel to professional meetings are extremely limited.

10. Budgeting and accounting procedures are organized in gross categories which are not suitable for generating types of data used in applying for research funds or for the monitoring of such funds.

B. The Need for College Involvement in Research

Small colleges, in particular, have important roles to play in research, especially in bridging the gap between basic research and its practical application in the schools. Without the active involvement of small colleges in research, a sizeable portion of the nation's schools will seriously lag behind time in their educational practices. Small colleges prepare a sizeable portion of teachers in order to fulfill the in-service needs of many of the surrounding schools, and to provide leadership to the community schools on matters of curriculum revisions and program development. Ignoring academic productivity among small colleges would most certainly handicap a large segment of the educational community from participating in the process of creating new educational products. What is more, the development of a scholarly atmosphere among small colleges is desirable for the following reasons:

1. It helps produce teachers who have the skills and the attitudes favorable to the pursuit of inquiry and creativity. Without such attitudes or skills teachers are not likely to be active participants in research or wise consumers of research products.

2. It helps improve the product of education in general by changing the focus of the school curriculum from one of creating a learner who possesses a great deal of factual knowledge to that of an independent learner - a learner who is capable of solving his problems through the process of inquiry. But this goal, however, cannot be reached unless learning procedures emphasizing inquiry are practiced by teachers. Only when emerging teachers participate in the process of inquiry with their professors can one expect them to learn the skills involved and to later practice them with their pupils.

3. It helps expand the applications of research. Much of the rigorous research that has been published is "theoretical." Efforts to find practical applications for theoretical research have been ignored under the assumption that the practitioner in the classroom could easily make the necessary adaptations. But, as Schutz (1966) pointed out, "This has not happened in the past, and there is no indication it will happen in the future unless deliberate efforts are made to fill the transition gap between each level of the continuum," (p. 14). Since education faculties in small colleges are practically-oriented, they are particularly suited for filling the existing gap between theoretical research and its utilization in school practices. To do so, however, they need to acquire the necessary skills and the resources for the job.

4. It speeds the dissemination of research products to the schools. School administrators usually turn to the faculty in neighboring colleges for help in the pursuit of curricular innovations and in the evaluation of school programs. If the creative and scientific environment flourishes among small colleges, timely dissemination of innovative procedures to schools becomes possible.

5. It reduces the lag between research and the utilization of its product in the schools. The present lag between research and its application in education averages a period of 30 years (Keppel, 1964). This stands in sharp contrast with other areas of knowledge such as medicine, where the lag is estimated at an average duration of only two years. Bringing students in small colleges into active contact with emergent ideas facilitate utilization of these ideas.

6. It fosters in the schools an atmosphere of confidence about research and its products. Many manufacturers of educational hardware make claims in marketing their innovative products without appropriately verifying the educational value of these products. Later, when the product fails to deliver the expected results, the practitioner develops a generalized negative attitude toward educational research and its products. Helping the practitioner acquire the procedures necessary for selecting worthy innovations can reduce the negative attitudes which are associated with failure, and can save both money and effort.

III. Changes Required for Research Productivity

Many changes must occur if small colleges are to be involved in research and the dissemination of its products in the schools. Probably the first and the foremost change lies in the acceptance of the value of research by both the faculty and the administrators. Change is not easy and must start from the top (Argyris, 1965). The willingness and the ability of the administrative leaders to pursue a consistent policy aimed at building the resources required for quality research and differentially rewarding faculty members according to the quality of their academic products is the first requirement for producing genuine change. Only after this commitment is accepted will other changes follow.

Commitment for research also means more than belief. It involves changes in both values and resources. Administrative policies must be changed. Faculty members have to be reoriented and retooled for research. Educational programs have to be revised. Facilities and resources for research have to be established. What is more, is that all these changes have to be coordinated in such a way that one action reinforces the other.

A. Administrative Policies and Actions

The administrative leadership of an institution determines its educational philosophy and hence, the direction and the quality of its academic products. By virtue of their leadership roles, and their control of faculty reward, college administrators exert a selective influence on the nature of the faculty who seek tenure in the institution and in the areas where these faculty members channel their effort. Furthermore, the administrators influence the direction and the quality of academic programs by controlling institutional resources.

More pointedly, when the administrative leadership of an institution recognizes academic research as one of the primary concerns of the institution, it exerts a deliberate effort in recruiting faculty members who have adequate preparation in research skills and experience in conducting research. In addition, administrators influence the direction and quality of academic scholarship among the faculty through control of reward. When criteria for rewarding academic productivity differentiate between real and pseudo-academic effort, between what is truly an academic publication and what is undertaken merely for the sake of publicity, and between service and research contracts, the direction of faculty efforts and the level of their productivity will be affected accordingly.

One must also recognize that research productivity depends on the availability of resources. No amount of faculty preparation can compensate for the lack of physical resources. If motivated faculty members are not provided with an environment conducive to unrestricted thinking, if the clerical and semi-technical help is not available in adequate supply, and if the curriculum is not open for experimentation and evaluation, these faculty members are likely to find their interests frustrated, and their morale gradually diminished. Ultimately, they either abandon their interest or seek work opportunities in other institutions.

In summary, the primary step in changing the role of a college to include research involvement lies in affecting the necessary changes in the attitudes and actions of its administrative leaders in order that research becomes a primary goal of the institution. Without appropriate actions by the leadership, verbal statements in support of research involvement are unlikely to produce any tangible results.

B. Faculty Interest and Preparation

Naturally, the heart of academic productivity in any institution lies in its academic faculty. No administrative policies, regardless of how favorable they are to research, or how pressing for academic industriousness, can by themselves create a tangible product if the faculty is neither willing nor capable of pursuing such a goal. Research requires on the part of a faculty member a reasonable degree of specialization in the disciplines. It also requires familiarity with the methods of research and with the procedures used in the management of programs. Research calls for an attitude of open-mindedness in entertaining various modes of attacking academic problems, a degree of sensitivity in recognizing exceptions, an attitude of skepticism toward accepting common sense solutions, and a mental set characterized by an interest in the pursuit of truth. It requires faculty members who are secure enough to venture beyond the known frontiers of knowledge without fear of failing or concern with pressures for conformity. It requires a willingness to exchange ideas in an open and critical, but objective, manner, for it is through such free academic exchange that a researcher sharpens his thinking and enhances his chances of finding the truth.

In brief, while the administrative policies set the tone, faculty members follow the tempo. They foster on their campus the atmosphere necessary for academic freedom. They actively seek the necessary research skills. They participate in recruiting other researchers. They produce and take responsibility for evaluating their academic productivity and they seek to strengthen and expand the academic programs to reflect the high level of scholarship they themselves foster.

C. Educational Programs

A research environment calls for academic programs which are discipline-oriented and which focus on problem-solving and the search for new knowledge. In such an environment, classroom interactions contrast sharply with prescriptive teaching (where the instructor is considered an authority and the learner a follower). The student is expected to acquire a strong background in the academic disciplines, and in his academic exchange with instructors, he is always challenged to inquire, document, test, or modify the logic underlying his convictions. In general, when faculty members in the professional program are research-oriented, the total academic environment tends to be free and creative. Not only is a student reminded that his unfounded ideas will be challenged, but at the same time, he is also invited to challenge the ideas of both his fellow students and instructors.

In summary, in a research environment, academic programs nurture diversification of experiences, development of specialized talents, freedom of thought, and the pursuit of new knowledge. Such programs also attract capable students who challenge their instructors to be more innovative. Only when the academic environment is built on freedom of thought can research productivity reach its maximum.

D. Research Facilities and Resources

As laboratories differ from lecture halls, so do the resources of a research-oriented campuses differ from those of campuses engaged in instruction and services alone. The differences are not merely in the physical resources need for research. They also relate to the procedures governing the acquisition and the maintenance of such resources.

On the resources level a campus which enhances research must provide the necessary research facilities such as ample office space, clerical assistance, expanded library facilities and computer services. On the operational level the policies guiding the acquisition of resources must be flexible enough to permit the researcher the latitude of freedom required for venturing into the frontiers of knowledge. The guiding feature for the policies should be the conservation of the researcher's time to those skills which are uniquely his. If a researcher finds himself entangled with various forms of red tape and is asked to justify every action which does not conform to time honored procedures his productivity will be reduced to minimum.

One more aspect of resources for applied research in education is worthy of special mention, namely that of data for research. Applied research on human behavior must be based on relevant data from a specified population. Institutions concerned with human learning do host a valuable population of learners. Hence they must maintain records on the characteristics of students, and their progress throughout and after the completion of the various educational programs. Without such data the utility of the population for research is limited indeed.

E. Coordination of Policies and Resources.

Needless to say, research productivity depends on more than the sum of the above factors for these factors are interdependent. Administrators recruit research oriented faculty and provide them resources. The faculty establish strong academic programs which attract talented students. In turn, the availability of capable students on a campus affects research productivity in that these students are then able to assist the faculty in their research. This not only improves the student's training and increases research output, but the inquisitiveness of the student challenges the faculty to do more creative thinking. The circularity of the situation is continued in that capable faculty are likely to attract funds which provide scholarships for students and which help increase the specialized resources of the institution. They also assit administrators in the recruiting of more research oriented faculty and in administering faculty reward based on the quality of the research product.

In summary, it is only when all of the elements in the environment work together in a way that is supportive of academic creativity, that research productivity becomes a reality.

IV. Organization of the Report

The first part of this report attempted to present in brief, the rationale for encouraging research productivity among small colleges.

This was accomplished by pointing to the growing need for research and the need for preparing the educational practitioners to be a wise consumer of research products. Later it examined the traditional philosophy of small colleges and pointed out the role which they can play in the continuum of research demands. Finally, it discussed the factors that contribute to research productivity on the campus, and the changes which colleges need to introduce as a means of developing their research productivity.

The following chapter deals in more detail with developing a program aimed at helping small colleges increase their research capabilities. First, it analyzes the problem. Next, it examines the educational literature in search for information relevant to the solution and finally it describes a model for affecting the desired change.

The third chapter deals with a description of the specific activities involved in implementing the proposed model among a consortium of three colleges.

The fourth chapter deals with evaluation. It discusses some of the evidence regarding the degree to which the program achieved its hypothesized objectives.

CHAPTER TWO

A SYSTEMS SOLUTION TO RESEARCH DEVELOPMENT IN SMALL COLLEGES

The previous chapter attempted to point out the need for research involvement among educators at all levels, and to emphasize the particular role which small colleges can and need to play in the continuum of research effort. It also pointed out that in order for small colleges to be able to play the expected role, they must undergo some changes both in their educational philosophy and in the way they distribute their resources.

This chapter presents in some detail the model which was developed to affect the increase in research productivity in small colleges. Since the development of the model utilized some of the procedures of systems analysis, the discussion starts with a brief orientation to these procedures. Later, using the analysis procedures as a guide, it examines in detail the problem of research involvement in small colleges, summarizes the relevant educational literatures, and describes a model for research development among these colleges.

I. Systems Analysis and Problem Solving

Systems analysis is a problem solving method which incorporates most of the characteristics of problem solving procedures used in science. The problems where systems analysis is used, however, differ in nature from those characteristic of science. Science is usually concerned with the search for the truth and is carried for the purpose of understanding how to predict or control events. Systems analysis, on the other hand, is usually concerned with finding solutions to real life problems. (Quade, 1964)

Real life problems differ from problems of science in the sense they deal with finding practical rather than idealized solutions. The problem is usually cast in a form of a minimum-maximum paradigm. For example, the problem may involve ways of maximizing the output of a factory with the minimum increase in costs or decrease in the quality of products. Constraints involving fixing some variables while seeking certain changes in others are also common. For example, the problem may be "given a certain amount of money/pupil, which combination of staff and resources promises to maximize pupil learning in the basic R's? The system analyst in dealing with real life problems then, unlike the scientist, is not free to manipulate variables at will.

Problems requiring systems analysis also differ from those of science in the sense that hard factural data on the variables involved in the problem are often lacking or incomplete, and that testing a hypothesized solution under controlled laboratory conditions is not possible. Thus, the analyst is forced to use some compromise procedures such as the "considered judgment" of experts, gaming, and simulation.

"Considered judgment" of experts is used when hard data on the variables involved in the problem are lacking. The process of obtaining considered judgment differs from opinion solicitation in that the expert is required to document the rationale which led him to select the recommended alternative, and thus it permits others to examine the reasoning used in the process of selection.

Simulation, gaming and mathematical modeling are used instead of experimentation. They involve testing alternative solutions under situations which although artificial do somehow approximate the real life conditions.

Other than such differences in goals and procedures, systems analysis essentially follows the same basic problem solving steps used in science. These steps, as shown in Figure 2.1, may be grouped under four categories:

1. Problem Formulation
2. The Search for Relevant Information
3. Solution Development and Testing
4. Interpretations and Decisions

1. Problem Formulation

An adequate formulation of the problem is the key step in solving it. A problem definition usually consists of first, the objective to be achieved expressed in some observable and quantifiable indices; second, the nature of the system input or the starting point; third, the assumptions involved; fourth, the constraints or the fixed conditions which the solution must not change; and finally, the criteria by which the appropriateness of the solution will be judged.

2. Search for Relevant Information

The second step in systems analysis involves searching the technical literature for any data which might influence the solution of the problem. Various relationships are explored, and alternative modes of attack are considered. Estimates of costs, needed personnel and time are also established.

Because of the complexity of real life problems, the search for relevant information is usually extensive. It covers the variables involved and their interdependencies, the available hard data as well as judgments of experts, and the estimates of needed personnel, supplies, development

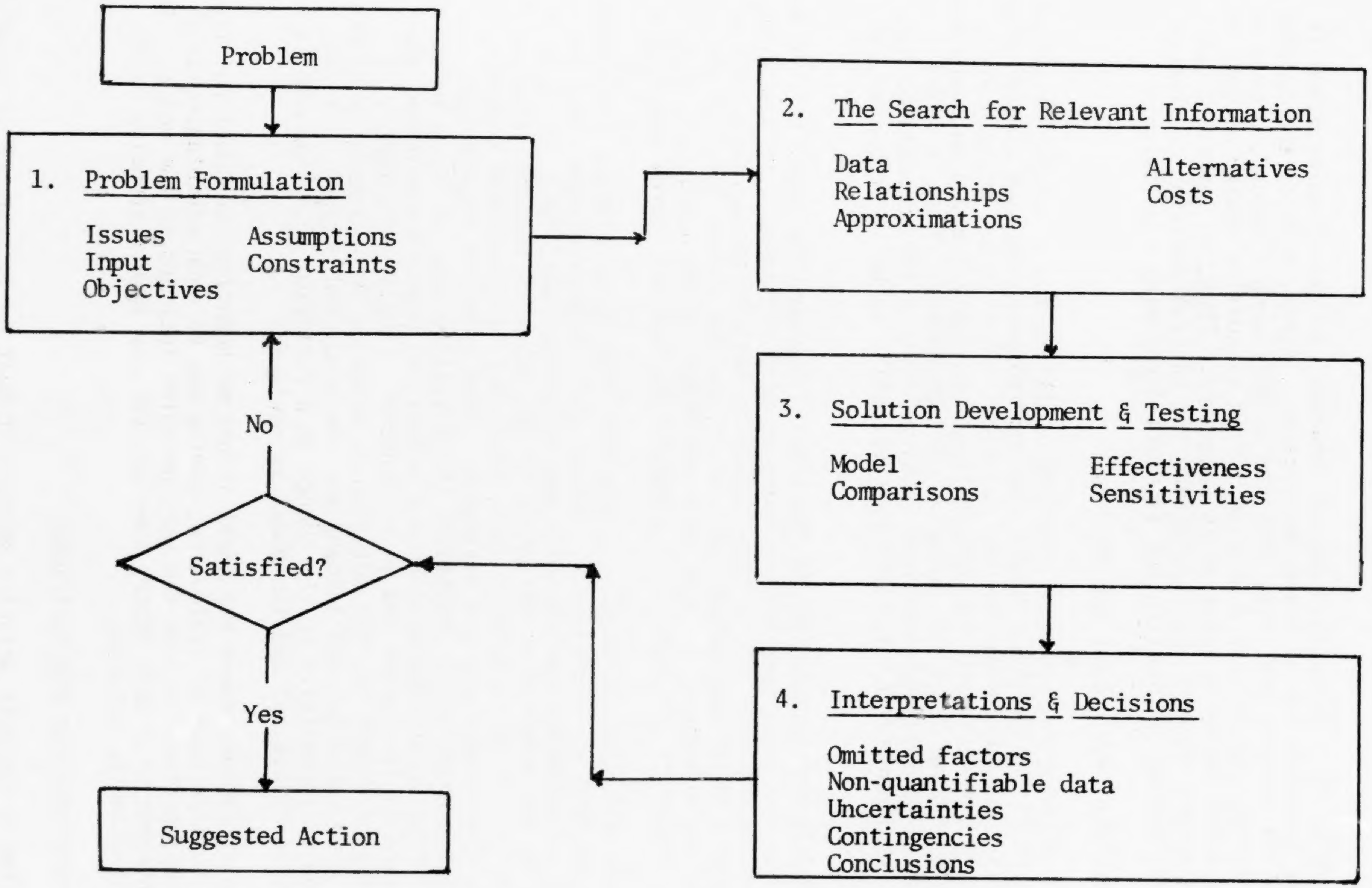
Problem
1. Problem Formulation
Issues
Input
Objectives
Assumptions
Constraints
2. The Search for Relevant Information
Data
Relationships
Approximations
Alternatives
Costs
3. Solution Development & Testing
Model
Comparisons
Effectiveness
Sensitivities
4. Interpretations & Decisions
Omitted factors
Non-quantifiable data
Uncertainties
Contingencies
Conclusions
No
Satisfied?
Yes
Suggested Action

Figure 2.1 The relationship between dimensions of systems analysis procedures. Modified from Quade, E. S. Methods and Procedures in E. S. Quade (Ed.) Analysis for Military Decisions. Rand Corporation, 1964, p. 158.

time and costs. Exhaustive search, however, is rarely entertained in systems research for at least two reasons. First, much of the information needed for solving real life problems is not known. Second, practical problems can rarely afford waiting for an exhaustive search of data to be completed before a solution is suggested. Thus, an important job of the system analyst involves making the careful decision of when to stop collecting information and to start developing a solution.

3. Solution Development and Testing

Developing the solution involves isolating the relevant variables uncovered in the previous search and incorporating them in a model which promises to maximize the desired solution. This is not an easy step. Even in a modest search for information, the analyst often uncovers more variables than a practical solution can accomodate. Thus, a major problem in formulating solutions involves sorting the accumulated information to identify the most relevant variables to be incorporated into the model.

Models are explanatory in function. They must be explicit, and they must show the interdependencies among related variables. In developing a model, assumptions may be made regarding matters too difficult to investigate. These assumptions must be explicitly stated for they are part of the solution. If more than one model can be developed, each model, including its underlying assumptions, must be stated separately.

Evaluation of the models is the next step in developing the solution; it may be done in several ways. First, the outcomes of the model are tested. A workable model enables one to predict outcomes. Thus, if a change in the independent variables of the model is reliably associated with changes in the dependent ones, the model is considered workable. Second, the assumptions are evaluated. This involves sequentially testing the model under conditions which violate some of its assumptions. If violating an assumption does not affect the predicted outcome, the assumption is irrelevant and is eliminated. Finally, the number of variables necessary for the solution is assessed by systemically eliminating one or more variables and solving for the predicted outcome. If the solution is insensitive to the change in a variable, this variable is considered irrelevant and the model is revised.

In situations where the model is not mathematical and does not lend itself to this type of evaluation, gaming may be used advantageously. In gaming, partners assume the various roles included in the model. Then they interact with each other; they uncover any inconsistencies or deficiencies in the solution.

4. Interpretations and Decisions

After a suitable solution emerges it must be interpreted in light of any considerations ignored in the process of its formulation. In this process the analyst attempts to answer questions as to why the ignored variables were considered irrelevant. He also points out any uncertainty he has about the effectiveness of the solution and the basis for his reasoning. For example, he identifies those conditions which if altered from those hypothesized in the model, would render the model ineffective.

In addition to such technical interpreations, judgments must also be made as to the practicality of the solution. Program management is often concerned with more than one problem and must make decisions about the acceptability of the model. Questions such as: is the minimum cost feasible; Can the project be conducted without reduction of personnel morale; Are the organizational changes required by the model practical, must be considered before the final selection of a model.

In summary, acceptable solutions depend on both the scientific skills of the analyst and the practical conditions of real life. A realistic solution of practical problems, which systems analysis tries to accomplish, is usually a combination of art and science. It relies on both facts and the judgment of experts. And since management decisions play an important role in determining what is an acceptable solution, the solution developed by an analyst is usually not the "ideal" solution but an optimum solution - one with which management can contend (Quade, 1964).

II. The Model for Research Development

Using the systems analysis model as a guide, the following pages intend to show in some detail the nature of the problem of research development in small colleges and the rationale behind the adopted solution. It should be emphasized, however, that because of the limited amount of empirical data available in the educational literature the problem analysis incorporates some subjective observations and interpretations. Despite the sensitivities involved in including such subjective information, the author of this report recognizes that they are part of real life. Perceptions do influence human behavior, right or wrong, and without doubt, the perceptions of the project director have had a significant bearing on the decisions made in both the development and in the implementation of the program. The inclusion of these subjective observations in the report is then necessary. They provide the reader with the "full story" - a basic requirement in scientific communications.

Before one turns to the analysis, it is desirable to define research. Research, as referred to in this report, is defined broadly to include any academic activity which involves the search for novel solutions to problems. It usually incorporates the development of a theoretical model or the testing of an application of models to practical problems. It may be descriptive or experimental; applied or basic, and innovative or evaluative studies. It, however, excludes expository writing of professional opinions and training programs which do not involve a component for systematic evaluation of outcomes.

Given the above definition, the research development program focused on the types of changes in small colleges which can enhance faculty involvement in such efforts. While the variables which affect research involvement are complex and interactive they could be conveniently divided into faculty related variables and administrators related variables. Hence, the following discussion treats the problem as involving two components of subsystems: (a) faculty subsystem and (b) administrators subsystem.

A. Faculty Subsystem

1. Problem Formulation

The faculty subsystem concerns itself with changes in faculty behavior which are needed to make them capable of actively engaging in research without sacrificing their present roles in instruction and service. Following the model presented in Diagram 2.1, the discussion of the problem may be divided into four parts: (a) issues of concern; (b) subsystem input; (c) subsystem output or objectives; (d) assumptions; and (e) constraints.

a. Issues of Concern

In examining the problem, several related concerns become eminent:

> What is the nature of the education faculty who teach in small colleges? What type of academic preparation do they have? What educational philosophy do they maintain? What attitudes do they have about research? What attitudes do they have about the role of small colleges in research?
>
> If faculty members in small colleges are encouraged to take part in research, what roles are they likely to favor? What area(s) of research are they likely to handle successfully? How can they be encouraged to participate in these areas of research?
>
> If supplementary training of faculty members in research skills is desirable, what skills should be included in the training program? What provisions should be made to permit a faculty member to seek only those skills he feels he needs, and thus spare himself the boredom associated with repetitive exposure to materials. What type of instructional setting would favor faculty learning of the desired research skills? What modes of instruction enhance the transfer of learning from the instructional setting to the actual process of conducting research?

b. Subsystem Input

The existing state of affairs at the beginning of the Research Development Program represents the starting point for the change or the systems input. Under a philosophy which emphasized the role of small colleges in teaching and service, the faculty of these colleges tend to possess the preparation and the attitudes consistent with that philosophy, namely:

> They have emphasized in their preparation the breadth rather than the depth of knowledge. They lacked intensive familiarity with theoretical foundations or the research techniques of their academic disciplines.
>
> They included a relatively high percentage of instructors without doctoral degress, and in contrast to the situation at the university level, these instructors held tenure.
>
> Many of the faculty members received their graduate training while holding full-time teaching jobs. Very few have had the experience of working in a research organization while pursuing their graduate education.
>
> They tended to be molar rather than molecular in interest. Thus they lacked the ability to analyse complex problems into basic components. In that sense, their questions tended to deal with general problems, problems which are not practical to investigate in research.
>
> They were value-oriented. They talked about improving the existing curriculum rather than developing a curriculum with some specified characteristics. Furthermore, they perceived evaluation procedures as the rating of events rather than the quantitative assessment of the products.
>
> They tended to be norm-oriented. In evaluating the effectiveness of a new procedure, they tended to compare it with some conventional procedure. They lacked the capability to utilize absolute performance criteria as a basis for measurement.
>
> They depended heavily on their own experiences in making educational decisions. Even when they examined the literature, they tended to seek a point of view which supported their own. They lacked the ability to suspend judgment in the light of conflicting evidence.

> They were practically-oriented, and as practititoners, they were skeptical of the utility of theoretical research in leading to practical solutions. To them, research was an intellectual activity carried on in the ivy tower of intellectualism. It rarely dealt with practical matters in a naturalistic setting. However, they tended to be indifferent to, rather than anti-research, in their attitudes. They were more willing to collaborate in research if first shown the relationship of the study to practical problems.
>
> They tended to follow a prescriptive rather than a problem-solving approach in their instruction. Examining the hows and whys of doing things received a secondary level of attention in their teaching.
>
> They were learner-oriented. Their concern was a humanistic one, focused on the learner as an individual. They viewed emphasis on the subject matter and on instructional technology as a cold, impersonal approach in education, one which sacrifices the welfare of the learner.
>
> They interpreted research as the process of proving a hypothesis rather than testing it. As a result, whenever the data did not support their expectations, research conclusions were labeled negative and were withheld from publication.

c. Subsystem Output

As previously stated, the objective of the Research Development Program is to enhance research productivity. This means that the philosophy guiding small colleges and their faculty roles must be revised to include research. It means also that small college faculty must possess both the attitudes and the skills necessary for conducting research.

Reasoning that the practical orientation of small college faculty would make them more interested in conducting applied research, especially in the area of instructional systems; and reasoning also that these faculty members, through their in-service program, are in an ideal position to act as agents for the dissemination and the implementation of research in the schools, the objectives of the program focused on developing the various skills required for these research activities.

> Possession of the skills necessary for developing and evaluating instructional systems. These include: (a) specifying the instructional objectives in operational terms; (b) identifying the conditions under which the instructional system would be implemented; (c) identifying the curriculum content sequence and the method of presentation; and (d) devising procedures for evaluating the product of instruction.

Familiarity with the essential criteria to be maintained in research. These include: (a) selecting a suitable research design; (b) defining the target population of individuals and identifying the appropriate sampling unit; and (c) identifying the conditions under which the research results are valid; and (d) knowing the various types of permissable interpretation in descriptive and experimental studies.

Possession of the skills necessary for critically reading and evaluating research reports. These include: (a) attending to such matters as the definition of the problem; (b) the conditions under which the study was made; (c) the likelihood that the observed change has resulted from factors other than those hypothesized by the researcher; and (d) assessing the degree to which results may be generalized.

Knowledge of procedures for abstracting the ideas collected from the literature and for integrating these ideas in the form of a technical report.

Ability to translate theoretical generalizations into practical applications, and to devise evaluative studies to test the validity of the reasoned applications under a naturalistic setting.

Familiarity with some of the sources available for funding research, the protocol of writing research proposals, and the skill for managing the proposed program when funded.

d. Assumptions

Underlying the planning of a research development program are certain basic assumptions concerning the interest of the faculty in research and their willingness to seek appropriate actions related to research involvement. Essentially, these assumptions can be summarized as follows:

Education faculty are not anti-research in their attitudes. Rather their lack of involvement in research is related to limited knowledge of research procedures; apprehension about the formal demands of organized research; lack of preparation in statistical treatment of data; and a difficulty in recognizing the utility of research to complex human problems faced by the practitioner in education.

Education faculty are willing to acquire the skills necessary for research, if provided in an atmosphere which is open, integrative, and supportive to morale.

The faculty of small colleges , because of their practical orientation, would be more interested in applied research. Basic research would not be as appealing to them because of its remoteness to the actual school learning situations with which they deal.

e. Constraints

The present roles of the small college must not be sacrificed to increase research productivity. Therein lies the most important constraint on the proposed change. Some adjustment and probably disequilibrium in the distribution of resources may occur at the beginning of the program, but steps must be taken to insure that research is not considered a substitute for either providing quality instruction to the students or for providing leadership and service to the community. Quality instruction is, however, defined here as that which is based on psychologically and academically reasoned instructional strategies, rather than on following the traditional patterns in teaching.

Another important constraint on the program lies in its relation to academic freedom. The program should not appear in any way to restrict the type of research pursued by a faculty member. Academic freedom must be respected and supported.

Finally, the introduction of the research development program should not be construed in any way to imply that small colleges or their faculty are guilty of academic negligence. In the past, research was not expected or supported. Now that it is needed, the colleges must "retool" to meet the demand.

2. The Search for Relevant Information

It is apparent from the description of the problem that its solution calls for providing faculty members with the attitudes and skills necessary for pursuing research. This objective, however, cannot be achieved unless the following questions are answered. What research skills are needed by the faculty? How can the skills be taught?

To find answers to these questions the relevant educational literature was searched. Unfortunately, the educational literature was not explicit on these issues for the concern with research training is relatively recent. Furthermore, most of the studies on the subject involved general surveys relative to global issues such as the preparation of educators who publish as compared with those who do not publish. Studies describing the content of training programs, especially in a setting similar to what has been described, were virtually absent from the literature.

At any rate, the following represents a summary of the findings which seemed relevant to research training.

a. Content of Training Program

Although inconclusive, the scattered evidence in the literature seems to point out:

> Little difference seemed to exist in the training of those who are academically productive and those who are not (Buswell and McConnell, 1966). The main difference between researchers who are empirically-oriented and those who are not is their preparation in statistics (Krathwohl, 1965).
>
> Knowledge of statistics, however, is secondary in importance to the ability to define the problem. Herrick (1963) emphasized this idea when he said:
>
> > ...the imagination and insight of the staff member in seeing and developing a problem area are more important as a prior condition than always selecting the most powerful design and methods of analysis... When the problem is the focus, we can always bring technical resources and help to bear upon it. We have members on our staff who have been sucking their statistical thumbs all of their professional lives and have yet to find an educational problem worthy of their statistical steel (p. 66-67).
>
> The basic research skills which training needs to emphasize are:
>
> > The ability to make objective observation, and communicate descriptions in clear and unambiguous terms (Guba, 1963). The utility of research and the reproducibility of its product cannot be accomplished unless the researcher has been able to communicate faithful descriptions of what was observed and the conditions under which he made his observations.

> The ability to use logical reasoning. Selye (1964) emphasizes that reasoning in research is different from the study of logic. The reasoning required in research is different from the study of logic. The reasoning required in research involves the ability to order events into antecedents and consequents and to raise questions regarding causal mediation. Reasoning in the sense making hypothetical deductions and building theoretical models was also emphasized by Guba (1969). In this case research involves verifying hypothetical formulations in these models.

The ability to ask answerable questions. Questions must be specific and relative to simple descriptions or comparisons to which the answer is basically yes or no. As Selye (1964) expressed it:

> Nature is not loquacious, she merely nods in the affirmative or in the negative. Occasionally, if we ask, "What should you do if...?" or "What is in such and such a place?" Nature will silently show you a picture. But she never explains. You have to work things out for yourself first, aided only by instinct and by the feeble powers of the human brain, until you can ask precise, practical questions to which Nature can answer in her precise but silent sign language of nods and picture (p. 284).

b. Instructional Procedures

More is known about desirable instructional procedures than the specifics of the content in training. Most of these procedures are direct application of principles of learning to the problems of military and technical training. But since research involves creative problem-solving - a more complex type of learning than skill training, not all the suggested instructional procedures may be applicable here. However, some of the relevant ones follow:

> Helping the learner to develop an appropriate mental set makes him receptive to the content of instruction. This may be done through the use of advanced organizers (Ausabel, 1963), through the use of pre-tests which direct the learner to the key ideas in the instructional materials, and through interpolated tests during instruction (Lumsdaine, 1962).
>
> Planning instruction to start with learning responses which already exist in the repertoire of the learner and then move to the new learnings.

Using specially selected prompts help the learner avoid errors (Kimble and Wulff, 1961). This is particularly helpful in motivating the learner to continue in learning. Partial prompting, however, is more superior to continuous prompting (Lumsdaine, 1962).

Involving the learner and pointing out the similarities between the learning tasks and future tasks increases positive transfer. Generalized behaviors and meaningful learnings are more readily transferred than specific facts. Thus training should concentrate on the generalizable principles and should provide practice over diversified exercises. Furthermore, the exercises should have similarity to the tasks which the learner is expected to encounter in the future.

Providing feedback to the learner enhances learning. It positively reinforces correct responses or effect and it guides the learner in making other responses. Exercises used for practice should be scored and returned to the learner shortly after his completion of the response.

Sequencing of the learning materials is important. When the learning experiences are arranged in the form of a hierarchy the learning of complex principles is enhanced by the previous learning of their components.

c. The Medium and Context of Training

The learning environment must be informal and integrative (Patton, 1962) so that a maximum interaction can occur among the learners and between the learners and the instructor.

Research productivity is more a function of actual experience in research rather than learning about research. Educators who continue to publish are those who were actively engaged in research activities during their graduate education (Buswell and McConnell, 1966).

Training through the use of simulated research projects can be used effectively especially when training through supervised involvement in research is impossible.

Encouraging active researchers to work with their inexperienced colleagues. Care, however, must be taken to insure that relationship involved is one of collaboration, rather than that of a researcher and an assistant.

Creating a vehicle for increased communication among researchers. A forum or a seminar, can provide researchers who often find themselves isolated from other faculty receive mutual support. It can also provide minds with common interests, the chance to share ideas and possibly join in team efforts (Herrick, 1963, Travers, 1964).

Encouraging interdisciplinary exchange of ideas helps improve the quality of research and researchers.

Easy access to some funds encourages exploratory research among faculty. Exploratory work helps a faculty member test his ideas before submitting them formally for funding. It can also encourage researchers to seek unconventional avenues and novel solutions (Krathwohl, 1965).

3. Problem Solution

a. Characteristics of Needed Program

Considering the objectives of the program and relevant literature on the subject, it became apparent that a flexible and diversified program for research training and practice was needed. The program would provide the participating faculty with:

The experiences necessary for conducting research on instructional systems and for disseminating research projects to the schools.

The experiences necessary to change their attitudes in a direction more favorable to research involvement.

The environment conducive to research through establishing an organization with which the emerging researcher can have professional affiliation and identification.

The medium for interdisciplinary exchange of ideas and for stimulating cooperative multi-dimensional attacks on educational problems.

The means for various faculty members to receive consultation relative to their specific needs in shaping research ideas and/or in writing proposals.

A multi-level program of training - one which permits each faculty member to start at a point corresponding to his level of sophistication and proceed at his own rate.

A diversified training program covering the key skills for research, development, evaluation, and management.

An atmosphere of freedom in which each faculty member exercises his choice in selecting the problem to be studied and the procedures to be used in the study.

A fund for encouraging emerging researchers to make the transition from thinking to action without the discouraging delay that is often associated with applying for outside research funds.

b. Program Components

Translating the above characteristics into a program required at least four types of activities or components. Although, as shown in Figure 2, these components are interrelated each has certain functions. The four components are: (1) local faculty seminars, (2) intensive research training seminars, (3) financial support for pilot studies, and (4) consultant services for the emerging researchers.

Local Faculty Seminars-- The local faculty seminar would involve a weekly meeting for one to two hours. Its membership would consist of all the faculty members interested in research regardless of experience or departmental affiliation. The seminar program would be flexible and would be planned by the participants. Thus at some time the participants may engage in an exchange of ideas relative to the philosophy and procedures of research. At another, a faculty member may discuss a study he is planning and get the assistance of his colleagues in strengthening its design. Still at another, a member may make a report on his research in a form similar to that expected in state or national research conventions.

Planned by the faculty the seminar would serve as medium for professional affiliation. It brings faculty members of common interest together and, hopefully, lets them see the opportunity of working together in research teams, and, since the membership in the seminar cuts across disciplines, the possibility exists for some interdisciplinary team research to emerge. Furthermore, once professional affiliation emerges, actions involving wide campus changes in programs, policies, and resources to serve the interest of research can be implemented.

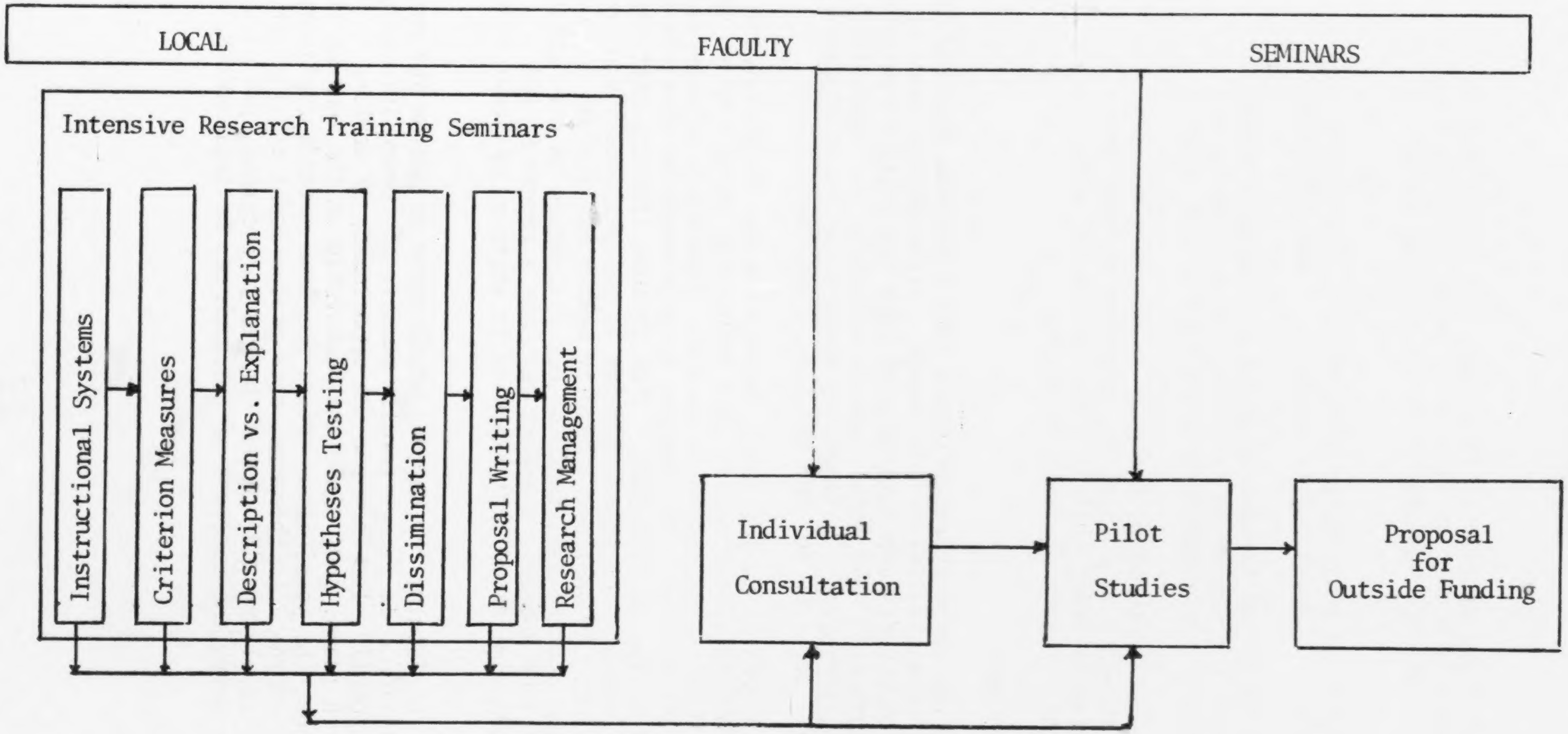
LOCAL
FACULTY
SEMINARS
Intensive Research Training Seminars
Instructional Systems
Criterion Measures
Description vs. Explanation
Hypotheses Testing
Dissimination
Proposal Writing
Research Management
Individual Consultation
Pilot Studies
Proposal for Outside Funding

Figure 2.2: The various components involved in the faculty subsystem of the Research Development Program.

Intensive Research Training Seminars - To supplement the training faculty members in research techniques the program would provide them with a series of workshops. Since not all faculty members need the same amount of training each workshop would be planned as an entity and would deal with a specified topic.

To determine the topics of the workshops a task analysis was performed on a sample of applied research studies (see Appendix C). By comparing the product of task analysis with information collected from the literature received earlier in this chapter, a priority ordering was made of the topics. Essentially low priority was given to statistical manipulation of data and to complex experimental designs at this stage of training. The remaining topics were organized in a sequence of seven workshops as follows:

a) Instructional objectives and evaluation
b) Direct and indirect observation of the criterion variable
c) Logic of associative and causative studies
d) Threats to the validity of results in research
e) Abstraction and dissemination of research results
f) The research protocol, critic and analysis of the components of the research proposal.
g) Management of research programs

To provide instruction in an informal atmosphere as recommended in the literature the college facilities were ruled out as a place for training in favor of resort motels. Meeting in motels away from campus, however, introduces problems such as absence from instruction and home. To reduce such problems, a two-day program was considered a realistic time for each workshop, although not essentially an optimum time for the amount of learning involved.

Instruction in the workshops, as recommended in the literature, would be best accomplished through the use of a series of exercises simulating applied research problems, followed by discussion to provide the participants feedback on the appropriateness of their responses. Lengthy lectures on the traditional topics common in textbooks on research would be discouraged. This constraint on instruction requires that extreme care would be exercised in the selection of consultants. Only those who have had experience in developing the desired exercises would be invited as instructors.

Finally, as recommended in the literature, these workshops were expected to provide a maximum of informal interaction among the participants and between the participants and the consultants. To permit such interaction both consultants and participants' time would be planned during the evenings for group social interaction and all participants would be expected to remain in the motel throughout the duration of the workshops.

Financial Support for Pilot Studies - As indicated earlier, faculty members in small colleges are often viewed as experts in their field of teaching. Under such premises the rejection of their research proposals by a funding agency can be demoralizing. Hence, they avoid the competitive situation of seeking outside funds for research. Some members also have the impression that funding agencies have negative attitudes toward small college faculty. A close look at the problem, however, shows that many of their proposals tend to deal with global, idealistic and often unmanageable studies. To help them see the inherent problems involved in such research plans, funds must be provided for them to test their ideas. During the course of testing, it is expected they will gradually see the real problem and seek help in refining their plans.

Studies of such nature must be viewed as "high risk" pilot studies. However, to permit the faculty member to formalize his ideas, a small proposal would be required before the funds are allocated. In addition to funding purposes, the proposal serves as a vehicle of communication between the consultant and the researcher. It also serves as a starting point from which the researcher assesses the changes in research design mandated by the practical conditions for research.

Consultant Services - Any training program, extensive as it may be, cannot presume to satisfy the specific needs of every faculty member. Furthermore, when a faculty member needs some assistance in planning a proposal, or in analyzing data, he needs assistance right then and not at a later date. While the local faculty seminars could provide an atmosphere for interaction among colleagues, in a way in which faculty members would feel comfortable enough to call on each other for assistance, a formal arrangement also seemed desirable. In that respect the designation of a coordinator with some experience in research would be desirable. True, as Herrick (1963) argues, no coordinator can possess the expertise needed by all members of the faculty, and true, providing assistance to individual members can seriously reduce the research productivity of the member who assumes the responsibility as coordinator. Nevertheless, a Research Development Program is essentially a learning situation. And while a good amount of learning can be pursued independently by the learner himself, guidance must be available when needed.

Considering the factors involved, the Research Development Program decided to designate a Research Development Officer. This officer would have as part of his academic duties some time for coordinating research. His role would involve compiling data on sources of specialized help and serving as a liaison between the new researchers and the consultants.

c. Target Population

To provide an environment which is conducive to interdisciplinary research, the population of faculty to be served by the program was defined to include any member of the college faculty, regardless of departmental affiliation, who is interested in research on instruction. Instructional research was broadly defined to include the curriculum, mode of instruction, conditions of learning and the learner. Psychological, sociological, and educational problems were considered equally worthy of support.

To encourage interaction among experienced and inexperienced researchers, the program resources would be made available to all faculty members on the condition that they be willing to join together to form a faculty seminar.

In summary, all those who participate in the seminar regardless of their departmental affiliation or research experience constitute the target population for the research development program.

B. Administrators Subsystem

Argyris (1965, p. 3) asserts that for an organization to be successful in introducing innovations "changes in interpersonal relationships, values, and norms must begin at the top... Few subordinates will alter their behavior until they have clear evidence that they will be rewarded for doing so."

Since the encouragement of research involvement on the part of small college faculty represents a change in the values traditionally held by these colleges, the administrators play a decisive role in affecting the change. What roles are they expected to play and how are essentially the two major issues at this subsystem.

1. Problem Formulation

a. Issues of Concern

What administrative policies encourage faculty involvement in research? What criteria could the administration use in evaluating and rewarding research productivity among its faculty? What measures should be used to discourage faculty members from engaging in pseudo-academic effort?

Since many of the administrative leaders in small colleges were originally faculty members in small institutions, and lack experience with research, what means could be used to orient them to the various demands which organized research usually imposes on the faculty and the institution? What conflicts are likely to develop when the value system of the college which traditionally rewarded "excellence" in teaching and service is changed to include a new set of expectations about faculty involvement in research? For example, in contrast to the university "publish or perish" atmosphere, small colleges take pride in providing small group instruction under an atmosphere favoring maximum student-teacher contact. What impact could faculty participation in research have on computing faculty/student ratio, and on the expectations regarding teacher-student interaction in and outside the classroom?

Involvement in organized research usually turns a faculty member into an "independent" administrator. In this case, his loyalty and professional responsibility tends to be divided between the institution and the research project. This contrasts sharply with the traditional set-up where institutional matters are considered the main focus of faculty concern. What work problems might result from that change? How can conflicts created by the division of responsibility be avoided or at least explained to all concerned?

What types of academic programs would attract capable and academically oriented faculty and students to the college? Can these programs be established through the revision of the existing ones or do new programs have to be developed?

What institutional resources are needed specifically for research? How can these resources be established?

What administrative assistance do researchers need for participation in organized research? What kind of machinery can be established to inform them of sources of funding? What aids do they need in interpreting and fulfilling contract regulations?

What criteria might be used in recruiting research-oriented faculty?

What procedures can be established to assist researchers in monitoring their research funds?

b. Subsystem Input

Administrative practices in the small colleges are consistent with its traditional role. In contrast to those of large universities, small college administrators voice the opinion that in their schools, the focus is on "good teaching." While rarely defined, the term "good teaching" is often used synonymously with instructing small groups of students in a setting which permits interaction between the instructor and his students. Consistent with this attitude is the fact that the faculty members are expected to advise the students, attend to some of the clerical duties related to their instruction, and supervise student activities.

More specifically, the tradition which has long existed in small colleges has led to a system of administrative procedures which may be described as follows:

Personnel Policies

When recruiting new faculty members, the emphasis is placed upon the candidates' experience in teaching. Experience in research is rarely considered. Furthermore, new faculty members are usually informed that their duties are essentially those of instruction and inservice activities.

In many cases, procedures for rewarding exceptional performance are absent. Salary increments are often fixed and are associated with the length of service. When the college policies permit meritorious salary increments, these increments are generally distributed according to such subjective criteria as the reputation of the faculty member for providing quality instruction and for engaging in community services.

Instructional loads are usually heavy and are planned with the implication that the faculty member is available for instruction most any time of the week. No provision is made for providing the faculty member with a block of free time to invest in research and/or writing.

Educational Programs

Most of the education programs in small colleges reflect the demands of professionalization. This is true even of the graduate programs. They tend to be oriented toward meeting the teacher certification requirements or updating the professional skills of teachers. Academic specialization is often discouraged.

Allocation of Resources

Secretarial help is usually limited and is based on an estimate of the clerical help needed in connection with teaching.

Library holdings tend to include textbooks and enrichment materials related to the course offerings. Primary sources of research literature are usually lacking.

Both the academic and the student personnel program lack provisions for their evaluation. When all efforts are presumably massed to provide quality instruction, there is usually little room for questioning the effectiveness of the program.

Travel to national or regional professional organizations is usually discouraged through lack of funds and through lack of teaching assistants to man classes while the instructor is absent.

Research assistants are usually not available. Most of the graduate programs are conducted as inservice evening or summer programs for teachers if funds are available. Very few students consider preparation for research desirable and are willing to work as research assistants.

Administrative Procedures

Data collected are limited to those about registration in academic program and faculty load. No provision is made for collecting data suitable for use in the evaluation of the effectiveness of college programs.

Institutional research activities tend to focus on collecting data needed by the administration in estimating teaching loads. Little research, if any, is done on student characteristics, faculty attrition and the like.

Accounting procedures tend to reflect categories needed in planning instruction. Specific information on costs of various support services are often lacking.

Attitudes Toward Research

Most of the administrative leaders in small colleges are products of the same college environments. Thus they tend to share with their faculty the same views about the practical impact of research on teaching and advisability of making research a function of small colleges.

Administrative leaders feel an obligation to preserve the traditional image of small colleges. They perceive that students who seek enrollment in these colleges are interested in small classes where faculty-student interaction is high. Changing class size to permit time for research is undesirable for it might adversely affect student enrollment - the key formula on which colleges receive their financial support.

Administrators do not see the necessity for evaluating college programs. The premise is that the institution is providing the best instruction it can, as documented by the way resources are allocated. Evaluation then is unlikely to lead to improvement while at the same time it involves the risk of undermining the confidence of the staff.

c. Subsystem Output

Academic productivity requires more than an expression of interest, and faculty productivity in research requires more than the verbal support of the administrative leaders. It requires the creation of an environment which attracts, conserves and rewards specialized talents. Operationally defined, the outcomes of the Research Development Program involve revising the administrative policies and procedures as follows:

Personnel Policies

Academic appointments do not separate teachers from researchers. Teaching and research would be expected of all faculty members.

Faculty recruitment criteria include evidence of both teaching and research skills. In evaluating the research experiences of applicants, priority would be given to those who evidence quality in the theoretical and emperical research rather than horatory writing.

Evaluation of faculty productivity is based on measures of quality teaching and research. In evaluating research the focus is put on the quality of the product and not the type of research. Basic and applied research are essential components of science.

Work loads are defined by a formula combining teaching and research. When research is expected of all, a faculty member does not get a reduced teaching load to do research. He merely divides his time in a way proportional to the demands of the tasks expected of him.

Teaching schedules reflect the demands of research. The schedule of every faculty member includes a block of time, free from teaching duties, to permit him concentration on research.

Educational Programs

Undergraduate programs include a provision for training capable students in research.

Graduate programs include preparation in measurement and research.

Resource Allocations

Adequate secretarial and clerical help is available to the faculty.

Research journals are part of the library holdings. Furthermore, book acquisition procedures permit obtaining reference materials through library funds at a rate faster than the normal acquisition rate for books.

Funds are allocated for faculty travel to professional organizations especially those which deal with research.

Funds are allocated for recruiting and employing assistants.

Administrative Procedures

Procedures in registration and in student personnel services includes the collection of systematic data to be used in the evaluation of the effectiveness of the college programs.

Institutional research involves evaluating the quality of instructional programs, assessing the reasons for student drop-outs, studying the faculty morale, and assessing the cost effectiveness of various programs.

Accounting procedures allow for the monitoring of outside funds and for the generation of data required in applying for organized research.

Attitudes Toward Research

The theme for research reflects a philosophy which is congruent with the mission of small colleges. Research is a means of finding ways of improving instruction and enhancing the mission of the college in serving students.

Evaluation procedures are task oriented. The concern of research is that of maximizing pupil growth. It is not one of identifying negligent instructors.

d. Assumptions

The implementation of a research development program in small colleges presumes a degree of willingness on the part of the administrative leaders to alter the traditional role of these colleges to include research. Concomitant with the re-definition of college roles it is also assumed that the administrative leaders are willing to work with their faculty in studying the administrative demands of research and in developing the necessary machinery for facilitating and rewarding faculty improvement in research.

More specifically the program assumes that the administrative leaders of the institution are willing to

accept research as one of the basic roles of the institution;

work cooperatively with the faculty in studying the demands of research;

establish explicit criteria for evaluating research products and for rewarding faculty members in proportion to their academic productivity;

develop the resources needed for research;

implement the administrative procedures necessary for the monitoring of research funds.

e. Constraints

The role of the administration in encouraging research should be one of support and facilitation. Punitive measures should be avoided at all costs. Furthermore, research must be considered an integral function of the colleges, not a substitute for quality teaching, student counseling or community services.

2. The Search for Relevant Information

In small colleges, administrators like their instructional faculty, tend to lack the preparation necessary for conducting research and the experiences required in the administration of researchers. To familiarize them with the type of administrative policies and procedures conducive to faculty productivity in research, a program of training is logically needed.

The literature on instructional procedures and the context of training was reviewed earlier in the discussion of the faculty training program. Hence the following discussion will focus only on the content of training. Essentially the search of the educational literature focused on finding answers to the following questions:

a. What are some of the means which administrators can employ to encourage and reward faculty involvement in research?

b. What are the demands of research in terms of resources and facilities and how can these demands be met?

Unfortunately, the review of the literature showed that the state of knowledge on the administration of researchers is primitive indeed. Most of the relevant literature is in the form of observations and opinions rather than the product of research on organizations. A sample of the more relevant findings is summarized below:

Research productivity is a function of recruiting faculty members who are prepared in research.

Concentration of faculty who share common educational philosophy and training hinders creativity (Herrick, 1963). Diversity of preparation and experience helps maintain a more balanced academic environment and encourages debate over academic ideas.

Administrator support for the activities of young researchers is necessary. It is especially crucial when the staff includes many older members with less favorable attitudes toward research (Herrick, 1963).

The right of the researcher to function independently on his own research, not under the direction of another must be maintained. "Individuals work with, not for, other faculty members. No young staff member becomes the flunky of a status figure." (Herrick, 1963, p. 66).

A means for familiarizing faculty members with possible resources for research support enhances involvement in organized research.

Administrators should support faculty members from other disciplines who are willing to participate in educational research. In the departmental evaluations, a faculty member is normally rated according to his involvement in his own discipline. To encourage interdisciplinary research, the administration must take special measures to reward those who are willing to venture into areas beyond the traditional lines.

Team effort should be encouraged. Many creative minds are not capable of generating procedures to test their ideas (Travers, 1964), and vice versa. Team effort is the only means to overcome such a problem.

Separation of faculty functions must be discouraged. Teaching, research, and service are the functions of every faculty member, even if on some occasions an individual might spend most of his time doing one function (Herrick, 1963).

Research, like teaching and service, must be considered a component in load assignment. The concept of released time for research is misleading. As Herrick (1963) expressed it:

> Since research is an important function of the university along with teaching and service, time is not "released" from one function such as teaching, to be used on other functions. Time should be "assigned" on the basis of required functions, program needs, and the competencies of the individual (p. 78).

Separate administrative organizations associated with research are detrimental to the concept of "whole staff" for research (Herrick, 1963; Guba, 1963). Furthermore, research bureaus pose many problems for their members. Examples of these problems include the dilution of staff effort through burdening the research staff by non-research activities, the inability of the staff to follow program related research, the lack of flexibility necessary for responding to new research thrusts, and the difficulty in engaging in inter-disciplinary research.

Quality research, like quality teaching requires systematic evaluation (Fredericksen, 1966). Means should be established to evaluate the quality of research and publications of the researcher on a systematic basis and to communicate to him the results of the evaluation.

A system of priorities for reward enhances quality research. Evans (1960) reports that reward in universities follows the following priorities: (a) research leading to publication; (b) research not leading to publication; (c) horatory and armchair publications; (d) service to professional organizations; (e) teaching; (f) service to public schools; and (g) service to lay groups. Whether this system of priorities is desirable for all colleges is not the issue. The issue here is that whatever system is adapted, it has to be made public and adhered to.

Procedures should help the researcher to acquire the resources he needs for his work with the minimum of red tape. It is uneconomical for research and frustrating to the researcher to spend much of his time dealing with procedural problems of purchasing and accounting instead of the planning of his research (Fredericksen, 1966).

Provisions should be made for the researcher to have easy access to the facilities needed for research. Assistance with proposal writing, budget making, computer programming, and statistical consultation is a must for research productivity (Herrick, 1963).

Seeking research support from outside funding agencies should be encouraged. Research is expensive and without adequate support, the chances of doing any significant research on campus is slim indeed.

A variety of university facilities must be made available for research with a minimum of "red tape". Examples of these include:

library carrels
duplicating machines
instructional media including graphics, photography

access to the computer facilities
technical assistance with research design, budgeting, and statistical analysis
funds for travel and study
publishing a list of available sources for scholarships, fellowships and research funds on a periodic basis

Formal and bureaucratic arrangements related to research such as the office of research coordinator are more often a hindrance than help in research. The implication of having a research coordinator is that one man can be experienced enough to assist all others. This is usually impossible to achieve. Even if a highly skilled person can be found making him a research coordinator "is a perfect way to reduce his own research production to a minimum" (Herrick, 1963, p. 78). What is more, administrating research in a separate way from teaching is inconsistent with the philosophy which considers both as academic functions of all faculty.

Paying staff extra compensation for research is undesirable. A policy that permits such compensation inevitably creates two types of citizens in the university - a condition which is not conducive to full faculty interaction and to good staff morale.

Some fluid risk-capital should be made available to the faculty with a minimum of screening. This capital often pays in two ways. First, it helps sustain the creative effort of faculty members when outside funds are temporarily dry. Second, it encourages faculty exploration of unconventional ways in research.

Research should be a commitment of the central administration of the institution as much as it is a faculty commitment. The involvement of the administration in research is crucial to exercising the proper leadership. It is also crucial in presenting the image of the institution as one which is committed to research as well as teaching (Herrick, 1963).

3. Problem Solution

To accomplish the above objectives in the sense of revising college role, personnel policies, educational programs, administrative procedures, and attitudes in a way which enhances research productivity requires a program which permits the administrators to seriously study the issues and the alternative solutions. A prerequisite to serious study, however, is the commitment of the leadership to change. Obviously a study of the problems of enhancing research for the purpose of deciding whether or not the institution should be involved in research requires a much different approach than that which can be pursued after the acceptance of research as a definite institutional goal. In the latter approach, the program of study focuses mainly on comparing the merits of various solutions, such as, that of establishing separate bureaus for research versus encouraging all faculty to engage in research. Since the assumption has been made that the administrative leaders are definitely interested in research the solution discussed below focuses on orienting administrators of the various avenues they may pursue in enhancing research.

The program essentially involves establishing a task force of faculty and administrators to study the various alternatives for affecting the change and recommend to the administration some course of action. To assist the task force in its work, consultants would be made available on a periodic basis. The consultants include researchers and administrators of researchers from both large and small institutions.

The topics of study include:

a. Characteristics of research and development as compared with service and training programs.

b. Criteria for assessing the quality of research products and for rewarding faculty members according to their productivity.

c. The advantages and limitations of establishing separate bureaus for research.

d. Avenues for allowing faculty members to budget time for research such as grouping similar classes in large lecture and small discussion groups, the use of student assistants to attend to clerical duties, and the like.

e. The roles which research committees may pursue in reviewing research.

f. Possible revisions in the academic program where more emphasis would be put on research-oriented rather than prescriptive courses.

g. Avenues for budgeting for a research fund to support the continuous involvement of faculty in research at the time when funds from outside the college are not available.

CHAPTER THREE

IMPLEMENTATION OF THE MODEL:
THE CONSORTIUM ON RESEARCH DEVELOPMENT

The previous chapter presented the rationale behind developing a program for increasing the research productivity of small colleges. As indicated in that chapter, research productivity on any campus depends on the active cooperation of both its faculty members and administrators; each group playing some unique roles in the process. Since these roles are diverse and since small college personnel tend to lack the experience in playing such roles, a multidimensional program of training was deemed desirable. The program consisted of two sub-programs, the faculty sub-program and the administrator's sub-program.

The sub-program for the faculty was essentially seen as one of research training and consisted of four components:

a. Weekly Local Faculty Seminars
b. Research Training Workshops
c. Assistance in Writing Proposals
d. Financial Support for Conducting Pilot Studies

The sub-program for the administrators involved also a program of orientation in the administration of researchers and consisted of a series of seminars on:

a. Personnel Policies
b. Curricular Revisions
c. Administrative Procedures
d. Attitude Toward Research Involvement

This chapter describes the activities carried in trying to implement the Research Development program in a consortium of three colleges. Within the description.some comments will be made about the problems encountered and about ways of avoiding these problems in the future. A more detailed description of the program evaluation, however, is given in the following chapter.

I. Establishing the Consortium

Since implementing a program of such magnitude tends to be expensive for any one college to support, a consortium was formed. It consisted of the State University College at Buffalo, New York, the State University College at Fredonia, New York, and Gannon College at Erie, Pennsylvania. Funds from the Research Development Program, the United States Office of Education, Department of Health, Education and Welfare were also secured. The program continued for three and a half years, from June 15, 1967 to December 15, 1970.

The college members of the consortium in many ways did not differ from other small colleges in philosophy and research participation. Thus, in most respects the discussion given in Chapter II under Systems-Input reflects the status of these colleges at the beginning of the consortium. The following merely tries to provide some of their more specific characteristics.

The Nature of the Institutions

Both the college at Fredonia and the college at Buffalo are members of the same parent institution - The State University of New York. They originated as teacher training institutions and although they later changed to be multi-purpose institutions, teacher preparation remained a major responsibility. Gannon College is a private institution which began as, and continues to be, a liberal arts college with a division for teacher education.

All the institutions were accredited to offer the bachelor degree for more than five years before the start of the project. In addition to the bachelor degrees, the three institutions also offered several accredited graduate programs in education.

Cooperative Relationship

Since the two New York State colleges are members of the same parent institution, have common educational goals, and are only 45 miles apart, there existed among them a considerable degree of interaction. Both the faculty members and the administrative officers of the institutions enjoyed a cooperative and a friendly relationship. It was such a relationship which prompted the cooperation in initiating the consortium.

Gannon College, being a private institution in another state, was not in close interaction with the colleges at Fredonia and Buffalo before the consortium. However, the interest of its leaders in developing the college's research capabilities was high. It took only one visit to the institution to set the machinery for participation in this project into motion.

Educational Research Involvement

The three cooperating colleges have been, since their inception, committed to instruction and services. Although some attempts were made to encourage research, of their programs and facilities were essentially similar to those of other small colleges. Research was not required, and the facilities necessary for research were limited.

For example, at the beginning of the Consortium, the college at Buffalo had two quasi-research organizations. The oldest of these organizations, the Child Study Center, engaged mainly in providing counseling services for the college's Campus School. Although three years before the beginning of the Consortium, the Center's role was revised to include research, actual research involvement remained a minimal. The second organization, the Center for Urban Education, was merely at its infant stage.

Research efforts in Fredonia were equally limited although probably more intense. In 1965, the College revised the role of its Campus School to be that of a laboratory for research on learning and curriculum. To coordinate the research, a Center for Behavioral Studies was organized under the leadership of the present project director. Funds were also appropriated for staffing the Center by a group of researchers and assistants

Although the establishment of the Center represented a positive commitment toward research, research activities did not naturally follow. Two problems stood in the way of research involvement. The first was the shortage of qualified research personnel. The second and most serious problem was that of bringing the Education Faculty and the Campus School teachers to play a cooperative role in research. To deal with the first problem a serious effort was launched to recruit some research staff. The second problem, however, required developing a program to orient the existing educators to the demands of research and to encourage their participation. The program was informal and included a series of research seminars and assistance in writing proposals. In one year, to the pleasure of all concerned, the program produced some tangible results. Several faculty members developed research proposals and were able to secure research funds from the Research Foundation of the State University of New York and the Fredonia Foundation.

Encouraged by that limited but positive experience, a serious effort was made to develop a more comprehensive program for research development. The effort resulted in establishing the present Consortium.

II. Administering the Consortium

Implementing the Research Development Program among the three colleges of the consortium required differentiation between two sets of activities.

1. Intra-institutional activities which included organizing the local Faculty Seminars, and developing the local policies affecting research.

2. Inter-institutional activities which included organizing the Intensive Faculty Seminars; reviewing the funding applications for pilot studies, and organizing the Administrative Leaders Seminars.

The administration of the intra-institutional activities was carried on by a faculty committee headed by a local coordinator called the Local Research Development Officer. (LRDO) The committee was elected from among the program participants, and was called the Intra-Institutional Committee.

The administration of the inter-institutional activities was carried on by an Inter-Institutional Committee. The committee consisted of the local Research Development Officers of the three participating institutions, and was headed by the project director.

The administrative functions of the consortium was divided among the two committees as follows:

1. The Intra-Institutional Committee - had the responsibility for:
    a. organizing the local faculty seminars and developing its program
    b. providing assistance to individual faculty members on the campus regarding the development of proposals
    c. submitting reports on the progress of activities on its campus
    d. supervising inter-institutional studies
    e. surveying the research facilities available on campus, such as library holdings in research periodicals, the availability of calculators, etc.
    f. recommending to the local administrators those actions which seemed necessary for developing the research resources of the institution
    g. providing liaison between local administrators and the faculty on matters related to teaching loads and faculty morale
    h. screening applications submitted for pilot studies from the local faculty and recommeding their revision and/or funding

2. The Inter-Institutional Committee - had the responsibility for:
    a. planning the Intensive Faculty Seminars
    b. making decisions regarding funding the pilot studies
    c. arranging for the Administrative Leader's Seminars
    d. assessing the progress of the total program and making decisions for change

III. Implementing the Program

A. Faculty Component

1. Announcing the Program

The announcement of the program to the faculty was made early in September of each year. In the first year, the education faculty members at Fredonia were called to a meeting in which the Dean of Education spoke of the explicit interest of the administration in research and the commitment of the college to make research one of its functions. He also announced that as Fredonia moves in that direction, several issues have to be studied and resolved both by the faculty and the administration. Following the speech, a specially prepared brochure was distributed (See Appendix A). The brochure described the objectives of the Research Development Program, the benefits that faculty members could derive from it, and the conditions under which a faculty member could participate in the program. It also described the procedures for establishing the local faculty seminars, and for the selection of the participants to the intensive research training seminars. At the end, a brief session was held in which the project director answered faculty questions on the program.

In Buffalo, the same procedure was followed. The Dean of Education at the college made the announcement on behalf of the administration. The announcement was followed by the distribution of the brochure and by a period of discussion.

At Gannon College, however, the announcement of the program was made by the president of the college via a letter distributed to all the faculty. The printed brochure on the Consortium was then distributed to all.

The announcement of the continuation of the program was made via printed brochures only. A sample of these brochures is also included in Appendix A.

2. Organizing the Local Faculty Seminars

Organizing the Local Faculty Seminars was considered on crucial matters. The membership in the Local Faculty Seminars defines the population of faculty to be served by CORD. Thus, to encourage maximum participation, the Inter-Institutional Committee originally tried to work with the chairmen of the various education departments so that faculty schedules would be arranged in such a way as to provide some time in the week in which almost all faculty members would be free from teaching assignments. Arranging such a schedule, however, proved difficult.

When the above effort failed, each Research Development Officer sent letters to all the faculty members on his campus inviting them to participate in the program. The letter asked those who were interested in participating to complete a survey form showing those hours of the week when they would be free to attend the seminar. The returned responses were then tabulated and the hour which was designated by the majority of respondents was set as a meeting time for the seminar. Invariably the survey was done twice a year; once at the beginning of the fall semester, and another at the beginning of the spring. In some cases one meeting time seemed restrictive. To allow more faculty to participate, the LRDO had to establish two seminar meetings a week instead of one.

During the first meeting of the seminar each fall, three participants were elected to form the Intra-Institutional Committee on Research. The Committee then surveyed faculty interests and based on the results of the survey it developed a program specifically tailored for the seminar participants.

While the specifics of the seminar activities varied from one campus to another, all seminars shared some common characteristics. First, they included discussions of completed research, planned research, and research procedures. They also included exploration of research facilities on campus, discussion of funding sources for research, and avenues for disseminating research reports. Second, they involved inter-disciplinary interaction. The participants included members from all areas of the behavioral sciences, the arts, the pure sciences, and from the humanities. Third, most of the program activities were carried on by the participants themselves. Outside speakers were held to a minimum.

A record of attendance was kept on a semi-regular basis. Naturally attendance fluctuated. The seminars tended to be more populated in the fall semester than in the spring. They were also more populated at the beginning of the semester than near its end as final examination time approached. Over the three-year period, the average number attending the seminar at Fredonia was 13, at Buffalo 16, and at Gannon College 4.

3. The Intensive Research Training Seminars

Seven Intensive Research Seminars were held during the three-year duration of the project: three during the first year and two during each of the following two years.

Characteristically, the seminars met on Thursday evening in a Motel with conference facilities, and continued until 3;00 P.M. on the following Saturday. The schedule usually started with dinner followed by an introductory session in which the participants were introduced, a pre-test was administered, and the program distributed. After this introductory session a social hour was held to allow informal interaction among the participants and the consultants. On Fridays, the instructional time usually consisted of four one and one-half hour (1 1/2) sessions - two in the morning and two in the afternoon. In the evening, a general session was also held to discuss research funding and/or proposal writing. The Saturday program included only three instructional sessions followed by a post-test.

Participants in the seminars were selected by a quota system based on the proportion of CORD participants on each campus. Applicants were accepted on a "first come - first served" basis and were informed that they were expected to attend both days of the seminar - No commuting permitted. This restriction as to attendance was imposed to encourage only serious participants to attend and to provide the participants with the opportunity for maximum formal and informal interaction among themselves and with the consultants.

The seven seminars basically dealt with the topics which were described in Chapter II and which are also analyzed in detail in Appendix C. The content of instruction, however, varied in some details from the description given in the Appendix. Two factors dictated the variation. The first factor was related to the interest of the participants. The second factor stemmed from the difficulty in locating consultants who would be willing to address themselves to the specified skills.

The problem of selecting consultants is worthy of separate discussion. To insure that instruction would involve a close approximation of the selected instructional model, a survey was first made to identify from the educational literature those researchers who had some expertise in the topic planned for the seminar. From that survey, a list of possible consultants was compiled and arranged in the order of their "experience" in the field. Starting from the top of the list, individuals were contacted by telephone and given a description of the expected task and the approximate date set for the seminar. When a consultant expressed interest to participate, a detailed description of the content of instruction and the procedures to be followed was mailed to him. Only one individual was contacted to serve as a main consultant for each seminar and that individual was given the freedom to select those who would assist him. If, after receiving the details (see example in Appendix C), the consultant remained willing to accept the job, a deadline was set by which he would have had a chance to prepare an outline of the instructional details for review.

At the specified deadline date, the project director sometimes accompanied by other members of the Inter-Institutional Committee, visited the consultant for a half-day conference. During the conference the planned content and procedures of instruction were reviewed and, whenever necessary, suggestions were made for revisions. When the plan was finalized, the consultant was given total freedom to complete the details of instruction, prepare the instructional materials, and develop the evaluation instruments.

The review conference with the consultants, which was used in planning all but the third seminar, often proved most worthwhile. First, it served to clarify the intent of the seminar beyond the description mailed to the consultant earlier. Second, it gave the consultant the information which helped establish some continuity among the content of the various seminars and reduce repetitive presentations. Finally, it permitted an informal orientation of the consultant relative to the level of preparation of the seminar participants.

A more detailed description of the program for each of the seven seminars, including the tests used in evaluation, is given in Appendix C. The following is only a summary of the seminar topics and the consultants involved.

First Workshop - October 12-14, 1967

Topics of discussion: A model for instructional research and development; components of the research proposal, types of research variables, operational objectives, defining educational outcomes, instructional specification and conditions of learning, criterion measures, experimental errors and the instructional environment, etc.

Consultants: Dr. Robert L. Baker and Dr. Robert Berger

Second Workshop - February 29-March 2, 1968

Topics of discussion: Observation and measurement, micro-teaching as a research tool, etc.

Consultants: Dr. Howard Sullivan and Dr. Kevin Ryan

Third Workshop - April 25-27, 1968

Topics of discussion: Theory-oriented research, data analysis and the testing of research hypotheses, experimental design and control of competing hypotheses, etc.

Consultants: Dr. Gerald Halpern, Dr. Peter Taylor, and Dr. Jason Millman

Fourth Workshop - November 14-16, 1969

Topics of discussion: A research and development approach to improvement of instruction, the logic of individually prescribed instruction, defining and analyzing objectives, constructing sequence and structure charts, hypotheses, evaluation, etc.

Consultants: Dr. C. Mauritz Lindval and Dr. Anthony Nitko

Fifth Workshop - March 27-29, 1969

Topics of discussion: Systems analysis, administrative applications of operations analysis, model elementary teacher education program, network concepts and information system.

Consultants: Dr. G. Ernest Anderson, Mr. Roy Forbes, and Dr. Jimmy Fortune

Sixth Workshop - December 4-6, 1969

Topics of discussion: Elements of a research proposal, purposes of research, formulation of research problems, specification and justification of objectives, logical structure of the study, role of hypotheses and questions in research procedures, research design or investigatory plan, methods of data collection and data analysis, etc.

Consultants: Dr. Blaine Worthen and Dr. James Sanders

Seventh Workshop - March 19-21, 1970

Topics of discussion: Nature of project management and project management model, management functions and processes, system theory and principles, establishing project objectives, developing work flow, problems and procedures in developing project schedules, planning for cost evaluation, organization for and implementation of project management systems, etc.

Consultants: Dr. Desmond L. Cook and Dr. Gregory Trzebiatowski

4. Funding Pilot Studies

A major objective of CORD was to encourage the involvement of new researchers in educational research with a minimum of hinderance or delay. But, in an attempt to encourage faculty members to learn the techniques of formal proposal writing, a set of guidelines for applying for funds was established by the Research Development Officers. The guidelines were what the officers thought to be a more simplified version of the guidelines for submitting proposals developed by the Regional Research Program. In brief, the guidelines were in two sections. The first section called for the applicant to submit a miniature proposal including a budget. The second set of guidelines dealt with some of the administrative procedures to be used in dispensing money, the copyright regulations, the approval of measurement instruments to be used in collecting data, and the like. (A copy of these guidelines are included in Appendix D.)

Again, since the intention of CORD was to encourage inexperienced researchers to engage in research rather than to fund the projects of the more versed researchers, another aid was developed. Namely, proposal review forms. The review forms were used to report to the applicant detailed step by step analysis of the weakness and strength of his proposal. Thus when a proposal was submitted, the Inter-Institutional Committee reviewed it, sometimes with the assistance of outside reviewers, and reported to the faculty member their opinions as to desired revisions in research design and to possible pitfalls to avoid in the process of implementation. (A copy of these forms are also included in Appendix D.)

The total procedure then involved asking the faculty member to submit his ideas in a form of proposal following the specified guidelines. The proposal was then reviewed. The faculty member was then informed of the recommendations of the reviewer and of the budget set aside for him. He was also given the second set of guidelines which dealt with accounting, copyright regulations, and instrument clearance. From that point on, he was free to proceed on his study.

Well-intended as they were, these procedures created a problem. The problem was detected when the anticipated flow of requests for funds did not materialize. An informal inquiry into the reasons for the limited request for funds uncovered these unexpected findings. Some faculty members felt that the presumably simplified guidelines for proposals were demanding and the process too formal. Others felt that their ideas were not developed enough to cast them in the form of a proposal, and felt reluctant to submit their ideas for review by colleagues.

Admittedly these findings came as a surprise to the members of the Inter-Institutional Committee. The findings, however, drove home the ideas expressed by Krathwohl (1965) and reiterated by Herrick (1963) on the freedom of research and flexibility in funding. More specifically, a more flexible approach to the funding of pilot studies had to be devised.

After considering several alternatives, the procedures for funding pilot studies were then revised as follows. Faculty members were invited either to submit a proposal or merely to discuss their interests informally with one of the Local Research Development Officers. If a member submitted a proposal, then the above review and funding procedures were applied. If he merely expressed interest in an idea he was given encouragement and was immediately allocated a small fund (between fifty and a hundred dollars) for purchasing whatever references or supplies he needed to start. A few weeks later, he was asked to submit a brief progress report specifying what he had done and what was being planned for the future. This report was then treated as a proposal and when appeared promising, more funds were made available for the applicant to continue his research. Near the end of each academic year, however, all persons who were given funds were asked to submit a report of their progress.

With this flexible policy faculty response increased. True, not all members who requested funds did complete their projects. On the other hand, some of what appeared first as crude ideas grew into formal proposals for funding by outside agencies. Some even resulted in reports which were published in prestigious journals. For the sake of this report, the following is an alphabetical list of projects funded in each institution.

Pilot Studies at Buffalo:

Bailey, Robert D.
"A Research Study of the Factors Influencing High School Seniors to Apply for Admission to an Urban State University College."

Barabasz, Arreed F.
"Test Anxiety Among Negroes and Caucasians."

Benson, Forrest W.
"A Comparison of Creativity Between Negro and White Disadvantaged Third Grade Students."

Bruno, John
"Development of Self-Instructional Program to Teach the Mechanics of Operating Selected Pieces of Audio Visual Equipment."

Carter, Donald E.
"Cognitive Complexity and Learning Facilitated by Advance Organizers."

Carter, Donald E.
"A Comparison Study of Negro and White Attitudes Associated with Educational-Occupational Aspirations."

Morrissey, Thomas J.
"A Study of the Scholastic Achievement of Junior College Transfer Students at the State University College at Buffalo in the Applied Science & Technology Area, 1965-1969."

Olsen, Henry D.
"Effects of Changes in Academic Roles on Self-Concept of Academic Achievement of Black and White Students."

Olsen, Henry D.
"A Pilot Study to Identify the Self-Concept of Academic Ability of Under-Privileged Black and White College Students."

Panther, Edward
"Teacher Objectives for the Education of Mentally Retarded Children."

Reiss, Philip
"Locus of Control, Social Reinforcers and Task Feedback in the Performance of Educable Mentally Retarded Boys."

Santilli, Muriel P.
"Effects of Parent Communication Training on Child Behavior."

Smith, Alden E.
"An Experimental Study of the Use of an Extended Laboratory Problem in Teaching College General Biology to Non-Majors."

Pilot Studies at Fredonia:

Ascher, Michael L.
"Genetic Change in Paired-Associate Learning."

Boyce, Jean
"Collecting A Data Base for an Educational Technology: Rank-Ordering Words as to Ease of Look-and-Say."

Collins, Eric
"An Experimental Study of the Effect of Certain Dimensions of Teacher Perceptions on Student Interpersonal and Intrapersonal Variables."

Colvin, Charles
"Reading Programs in the Colleges and Universities of Pennsylvania."

Dingledy, David
"Evaluation of the Application of Statistics as a Teaching Device in General Chemistry Laboratory."

Lawson, Edwin
"Evaluation of Reactions to Speech Patterns of Minority Group Members."

Lawson, Edwin
"Socio-Economic and Developmental Differences in Reinforcement of School Children."

Lewis, Carl
"Student Perceptions of the Advantages of the Old Style Dormitories in Comparison with the Suite Type Dorm."

Roeder, Harold H.
"A Nation-Wide Survey of the Reading Methods Courses Required for Certification of Undergraduates in Elementary Education."

Schaffer, Eliott
"Agreement on Stuttering and Non-Stuttering Dysfluency."

Sefein, Naim A.
"Survey of Measurement and Research Requirements in Teacher Education Programs."

Sefein, Naim A.
"The Semantic Structure Certain Educators Associate with Research Related Concepts."

Sefein, Naim A.
"Factors Associated with Student Dissatisfaction with College Life."

Sefein, Naim A.
"Student Satisfaction with College and Attitudes Toward Rating Teachers."

Pilot Studies at Gannon:

Gamble, Kenneth R.
"Color-Word Performance as a Joint Function of Manifest Anxiety and Stimulus Conflictfulness."

Culp, Robert H.
"Pilot Study to Investigate Changes in Counselor Trainees After Participating in Basic Encounter Groups."

Roach, John
"The Relationship between Writing Ability and Certain Personality Traits as Defined by the Guilford-Zimmerman."

5. Supplementary Activities

In addition to the formally planned programs stated above, some funds were used to meet faculty needs in several supplementary activities. Among these activities were:

Research Training by Other Agencies - To serve the specific needs of some faculty members, funds were used for the partial support of five faculty members to attend the pre-session research training programs conducted by the American Educational Research Association. Four others were also assisted to attend an institute on the use of simulation in teacher education.

Attending Professional Meetings on Research - To introduce the emerging researchers to the community of researchers, some travel funds were used to encourage several faculty members to attend the meetings of the Educational Research Association of New York State and the American Educational Research Association.

Assistance in Seeking Outside Research Support - Effort was made to assist the emerging researchers to seek outside funding. Presentations of the guidelines of the regional research program of the USOE were made by Dr. John Sokol to the participants in Research Training Workshops 2, 4, and 7. Meetings were also held on the campuses of the participating schools in order to inform those who were not involved in the workshops. Information on other sources of funding was also given by Dr. James Colmey during the Fourth Workshop on research.

In addition to these formal presentations, references on various federal research support programs, and a directory of U.S. Foundations, were made available to the faculty to consult. In Fredonia, specifically, CORD cooperated with the coordinator of organized research by partially supporting the publication of a monthly list of the programs announced by various agencies and the deadline for applications.

As the Local Research Development Officers became familiar with faculty interests, they sought information on research which might be of interest to some. Whenever they located a plausible source of funding they sent personal notes to the specified faculty members informing them of the guidelines of the program.

Assistance in Research Dissemination - Finding the appropriate channel for disseminating an idea or a research report is not an easy matter. Fortunately a booklet (Lins and Rees, 1965) provided a summary of the interest and the style required by various educational journals. Several copies of this document were purchased and circulated among the faculty.

Developing an Independent Learning Laboratory on Research Methods - Independent research training materials such as those developed for the training of CORD leaders by the staff of the Teaching Research Division of the Oregon State System of Higher Education, as well as some commercially prepared materials on instructional research, were asembled to provide an independent learning laboratory on research. Many of the materials were packaged in the form of units, each consisting of a tape-slide sequence presenting the ideas, exercises for practice, and a criterion test for measuring the mastery of the objectives. The learning materials were filed in the Independent Learning Laboratories of each of the participating colleges and thus were made available to all faculty and staff during most hours of the day and evening.

B. Administrators Component

Since the presidents of the three colleges had endorsed the CORD program and since the president of Gannon College and the Dean of Education in the cases of Buffalo and Fredonia had taken part in announcing the CORD program to their respective faculty, there was no doubt that the administrators of the institutions were interested in encouraging research on their respective campuses. With that in mind, the administrative workshops focused on discussing the various issues involved in the administration of researchers, such as those related to encouraging, supporting, and rewarding faculty involvement in research.

The invitations to attend the workshops were sent to the presidents of the three institutions. The presidents were encouraged to attend and were also given the opportunity to invite all individuals whom they felt would be desirable participants. Two of the presidents accepted the invitation to attend the first workshop, but later were unable to do so. While the coordinators of CORD felt the presidents' participation would have given the faculty a more effective image about the institutions' commitment to research, the presidents' inability to attend the workshops was understandable. Furthermore, the individuals designated by the presidents to represent their institutions included the Deans for Graduate Studies and Research and the Deans of Education - a highly influential group of leaders.

Three workshops were held during the duration of CORD. The first was for one day. Later it was found more desirable to hold the workshops for a day and a half each. Participants usually arrived in the evening for a reception and dinner, followed by a work session; and continued through most of the following day. A more detailed list of the materials used for discussion in these workshops is included in Appendix E. The following is merely a summary of topics:

First Administrators' Workshop - January 13, 1968
Topics:
1. Encouraging faculty involvement in research
2. Procedures for rewarding research productivity
3. Procedures for proposal reviews on campus
4. Faculty load and its distribution between teaching and research

Consultants:
- Dr. David Krathwohl, Dean of Education, Syracuse University
- Dr. Raymond Ewell, Vice-President for Research, SUNY at Buffalo
- Dr. Harry Porter, Provost, State University of New York
- Dr. John Sokol, Director of Research, USOE Region II
- Mr. Thomas Davern, The Research Foundation of SUNY

Second Administrators' Workshop - April 21, 1968
Topics:
1. Encouraging research productivity - the role of faculty freedom, program diversity, and graduate curricula
2. Avenues for achieving a balance between involvement in community service and in research
3. Developing procedural guidelines to aid the faculty in writing proposals

Consultants:

Dr. David Krathwohl, Dean of Education, Syracuse University
Dr. Raymond Ewell, Vice-President for Research, SUNY at Buffalo

Third Administrators' Workshop March 13-14, 1969
Topics:

1. Discussion of a paper "Consortium on Research Development: Program Rationale." (See Appendix E)
2. Instruction, service, development, and research: how can they be achieved?
3. The administration of researchers
4. Developing a handbook of policies affecting faculty involvement in organized research (see Appendix E)

Consultants:

Dr. Edwin Hollander, Professor of Social Psychology, SUNY at Buffalo
Dr. James Colmey, Director, Bureau of Research and Services, Memphis State University

CHAPTER FOUR

EVALUATION

Real life programs pose special problems in the process of evaluation. Controls cannot be easily established and sorting the effect of the manipulated variables from those of other uncontrolled variables is relatively difficult. The Research Development Program was no exception. Some of the problems were precipitated by the difficulty of selecting suitable measurement indices. Others were related to separating the effects of the program components from the effects of other variables. Still others were related to those uncontrollable factors such as the mortality rate among participants. All factors considered, the problem of evaluation proved difficult indeed.

Some of the problems may have been avoided, at least in part, had the process of planning been much more extensive. But in this project, like in most real life solutions, extensive planning was not feasible. Thus some of the problems became obvious only when it was too late to correct them. To help those who intend to replicate the model avoid the limitations of this project, the following discussion deals with what has been done and what could have been done in evaluating the program.

Two types of evaluations were planned in the Research Development Program: formative evaluation and summative evaluation. Formative evaluation intended to assess the degree to which the Research Development Program as carried in this Consortium agreed with the theoretical model. Summative evaluation intended to assess the degree to which the Program produced its anticipated outcomes.

I. Formative Evaluation

The activities in the formative evaluation process were carried out for the purpose of assisting the management in making the necessary decisions concerning the progress of the project. First, these activities intended to assess the degree to which the components of the Research Development Program were actually carried out as planned in the model. Second, they intended to assess whether the program components had produced their expected outcomes. Whenever the evaluation data suggested that a discrepancy between the observed and the expected outcomes existed, changes were made in the model and implementation. Making these changes early in the program was expected to increase the efficiency of the program.

Among the questions raised in the process of formative evaluation were:

1. How did college faculty view their role?
2. How did the attitudes of faculty members who expressed interest in the Research Development Program differ from those who did not?
3. What effect did the explicit announcement made by the administrative leaders in favor of faculty participation in research affect faculty response to the program?
4. Did the faculty seminars fulfill their anticipated objectives?
5. Did the component of the program concerned with funding pilot studies encourage participants to do research?

A. How did College Faculty View Their Role?

In Chapter II it was discussed that the faculty of small colleges view their role as one which involves instruction and service. Research is considered more of a function of the university. It was argued also that unless such an attitude is changed the likelihood for the success of the Research Development Program is limited.

To verify this impressionistic assessment of college faculty a Semantic Differential Instrument was used. The instrument was especially designed for the study according to the procedures described by Osgood, et al (1957) and consisted of fourteen concepts to be rated on nineteen scales. Twelve of the fourteen concepts represented an array of activities related to teaching and research. The remaining two concepts were "college" and "university." The hypothesis was that if the above assessment of attitudes of college faculty was true, a factor analysis of faculty ratings of the concepts would produce two separate clusters of concepts. The concepts related to teaching would be more closely associated with college and those related to research would be more related to university.

The Semantic Differential Instrument was administered to about one-half of the Education faculty in Fredonia and in Buffalo before the announcement of the Research Development Program and to the other half after the announcement of the Program. The reasons for that mode of administration will be explained later in discussing the second and the third evaluation questions. Although this variation in the time of administration was expected to affect some variation in faculty rating of the concepts, it was felt that such variation is least likely to affect the way the respondents see the concepts as related. Hence the analysis of data on the concepts ignored the time of administration as a source of variation in responses.

TABLE 4.1

FACTOR LOADING OF CONCEPTS
(VARIMAX ROTATION)

Concepts	Factor 1	Factor 2	h^2
1. College	.771	-.246	.656
2. Statistics	.247	-.670	.511
3. Proposal	.464	-.494	.460
4. Publication	.461	-.457	.422
5. University	.615	-.385	.527
6. Curriculum	.589	-.303	.440
7. Testing	.249	-.677	.522
8. Evaluation	.573	-.457	.538
9. Behavioral Objectives	.594	-.220	.401
10. Research	.632	-.435	.590
11. Obj. Observation	.439	-.440	.387
12. Teaching	.782	-.155	.637
13. Experimentation	.554	-.444	.504
14. Survey	.114	-.425	.194
Percentage of Variance	29.17	19.35	

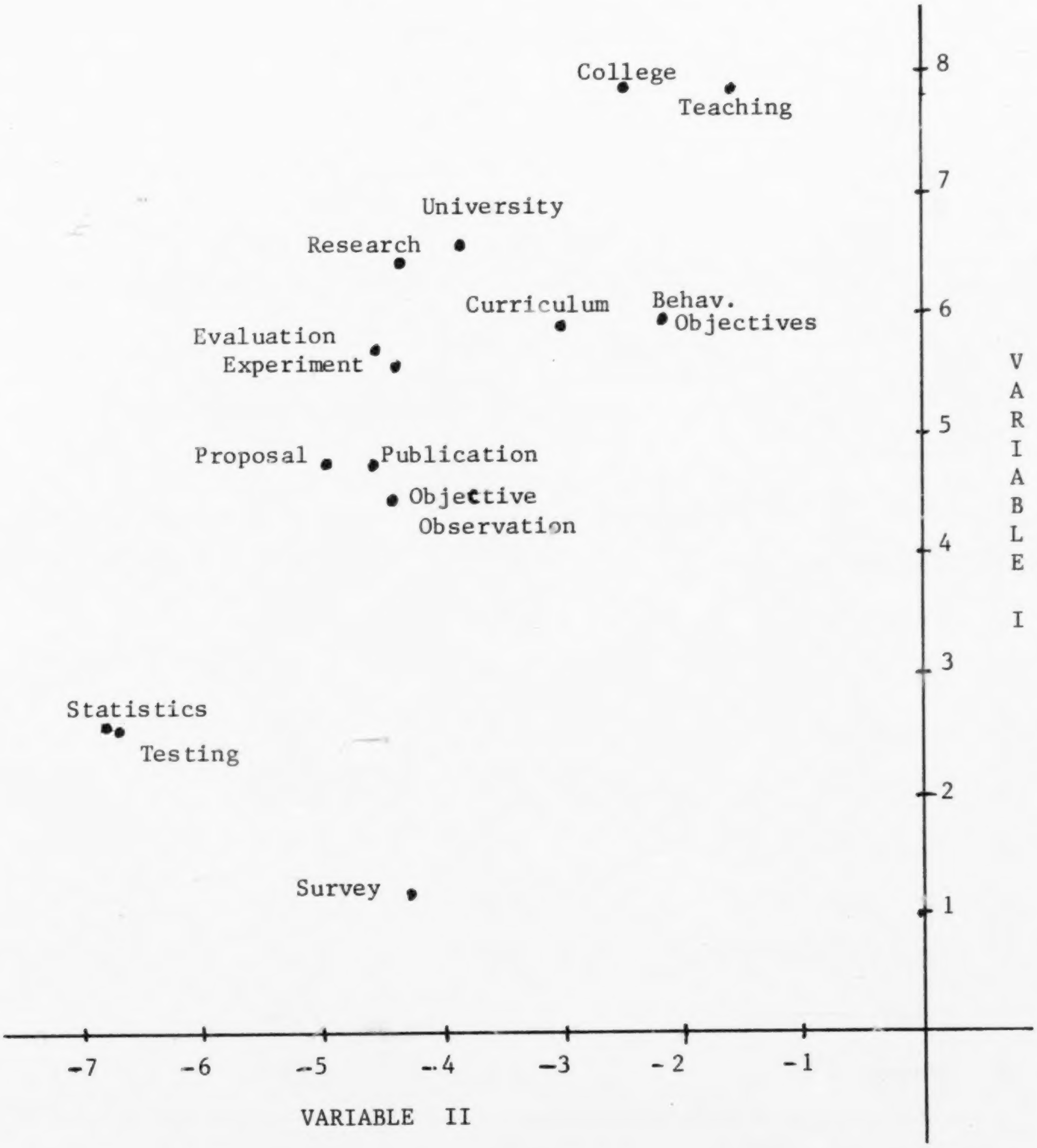

Figure 4.1 - Concepts plotted with respect to the two principal-factor axes.

A more serious variable which was feared to interact with the concept clustering was seen to be that of faculty interest in research. To verify whether such was the case the respondents were divided into two groups according to their interest in research as indicated by their expressed interest in participating in the Research Development Program and their concept scores which were factor analyzed separately. Image analysis followed by varimax transformations, however, resulted into the isolation of two sets of comparable factor loadings.*

As can be seen in Table 4.1, two factors were isolated. To help interpret these factors the various concept values were plotted graphically in Figure 4.1. As can be seen from that Figure, the concepts College and Teaching are clustered on one side and the concepts Survey, Statistics, and Testing are clustered in a position diametrically opposite to College and Teaching. The concepts University along with the other concepts form a cluster centrally located between the other two clusters.

To put it differently, the way the various concepts cluster seems to bear out the reasoning that college faculty see teaching as the main function of colleges. They also see the university as one which has a broader function. What is more, they way the concepts Testing, Statistics, and Survey are isolated from Research and Experimentation is particularly interesting. It conveys the image that college faculty do not see quantitative analyses as being part of research.

In summary, the results of the analysis bear some evidence to the contention that the success of the Research Development Program is dependent on the degree to which it can change the attitudes of the college faculty in at least two dimensions. First, it depends on the degree to which it brings the faculty to recognize that research involvement is one of the functions of colleges and second, it depends on the degree to which college faculty accept quantification procedures as a means for empirically verifying impressionistic observations.

B. The Effect of the Administrators' Announcement

In Chapter II it was indicated that explicit administrators' support for research was an essential prerequisite to faculty involvement in research. It has the function of informing the faculty that the change in the role of the college was real and that faculty preparation for the change is necessary. Operationally, such an announcement was expected to increase the proportion of faculty members who participated in the Research Development Program. A direct measurement of this effect could have been accomplished by comparing the proportion of faculty members who expressed interest in participating in the program before the administrative announcement and again after the announcement. This, however, was not done. Instead, an indirect approach was used.

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* The author is indebted to Dr. David Farr for his assistance in analyzing the data on the Semantic Differential instrument.

The indirect approach consisted of assessing faculty attitudes toward research before and after the announcement using the Semantic Differential described above. By administering the instrument to a randomly selected half of the education faculty before the administrative announcement, and to the other half after the administrative announcement, any difference in the responses of the two groups of faculty would reflect the effect of the administrative announcement on the expressed faculty attitudes toward research.

Early in the Fall of 1967, before announcing the Research Development Program, a randomly selected half of the education faculty in Buffalo and in Fredonia received the instrument via campus mail. The directions merely informed the respondents that the instrument was related to a study of meanings being conducted by a colleague. About ten days after this mailing, the Deans of Education in Fredonia and in Buffalo called faculty meetings. In these meetings, each Dean announced to his respective faculty that the college administration was committed to involvement in research, and that the administration intended to study and develop the machinery for facilitating and rewarding the faculty for such involvement. The Deans also stated that the administration was aware that some members were prepared to engage in research and may not need assistance to do so. However, all faculty members were invited to take advantage of the resources provided through the Research Development Program supported by the U.S. Office of Education.

After the discussion of the objectives of the Research Development Program, those faculty members who had not previously completed the Semantic Differential were asked to remain and respond to the instrument. As in the case of the first administration of the instrument, these respondents were informed that the study was concerned with the meanings associated with the given concepts. They were also assured of the confidentiality of the individual responses.

The analysis of data to measure the effect of the administrative announcement on faculty responses involved: (a) factor analyzing the scores to identify scale clusters, and (b) comparing pre- and post-announcement scores of each cluster of scales summed over all the concepts.

Separate factor analyses were performed on the data obtained from the pre-announcement and the post-announcement groups. Image analysis followed by Varimax rotations produced essentially the same factor structure from both sets of data.

Four factors were isolated in the final analysis as accounting for most of the interpretable variance. The nineteen scales, their factor loadings and the communalities are reported in Table 4.2. As can be seen in the table, four scales (powerful-weak; convincing-doubtful; facilitating-hindering; and congruent-incompatible) had their variances widely spread among the four factors. To reduce the correlation among the factors in further data analyses, these four scales were dropped. The distribution of the remaining fifteen scales among the four clusters, is reported in Table 4.3.

To simplify the discussion of the isolated factors a label was given to each cluster. Each label describes the adjectives in the cluster which were assigned the higher scores. These are:

1 - Potency: This identifies cluster 1, where the positively weighed adjectives were concerned with conclusiveness, decisiveness and stability.

2 - Intellectual Openness: This identified the cluster 2 where the positively weighed adjectives emphasize originality and creativeness.

3 - Intellectual Demand: This identifies cluster 3, where the positively weighed adjectives emphasized complexity and difficulty.

4 - Utility: This identifies cluster 4, where the positively weighed adjectives emphasized practicality significance.

Based on the results of the factor analyses the cluster scores were computed for all respondents and were used in further analyses of the data.

At this point it should be mentioned that the data used in answering the question of pre-post-announcement differences were also used in answering the next question in evaluation, namely: that regarding the differences among the participants and the non-participants in the Research Development Program. Thus instead of performing two separate analyses to answer the two questions, a combined analysis of the data was performed using multivariate analysis techniques. For the sake of brevity, the results of that multivariate analysis are reported after the discussion of the question regarding the differences among the participants and the non-participants. Suffice it to say here that no significant differences were found among the responses of the pre-announcement and the post-announcement groups.

TABLE 4.2

ROTATED FACTOR MATRIX OF SCALES
(VARIMAX ROTATION)

Scale	I	II	III	IV	h^2
1. inconclusive - conclusive	-219	-454	-074	-075	294
2. decisive - confusing	280	515	-012	206	407
3. significant - unimportant	365	282	228	423	448
4. stereotyped - original	-579	-197	-125	-056	396
5. mechanistic - humanistic	-646	010	-055	-096	433
6. natural - artificial	620	129	-010	160	429
7. weak - powerful	-456	-344	-261	-313	499
8. useless - practical	-404	-287	-218	-441	488
9. shallow - deep	-507	-289	-343	-247	531
10. creative - restrictive	623	167	078	095	438
11. doubtful - convincing	450	-457	-234	-251	535
12. facilitating - hindering	444	326	113	358	454
13. changeable - stable	049	-350	014	031	131
14. solid - shaky	393	518	110	202	483
15. calm - stormy	166	392	-197	109	241
16. methodical - disorderly	075	493	-005	185	303
17. simple - complex	-147	007	-583	-105	372
18. incompatible - congruent	-347	-430	-182	-178	378
19. easy - difficult	-063	028	-548	-027	305
Percentage of Variance	16.60	11.62	5.82	4.99	

TABLE 4.3

SCALE CLUSTERS

I. Potency	II. Intellectual Openness
conclusive - inconclusive	original - stereotyped*
decisive - confusing	humanistic - mechanistic*
stable - changeable*	natural - artificial*
solid - shaky	deep - shallow
calm - stormy	creative - restrictive
methodical - disorderly	
III. Intellectual Demand	IV. Utility
complex - simple	significant - unimportant
difficult - easy*	practical - useless*

*polarity of scale reversed from response card

This lack of differences among the responses of the pre- and post-announcement in some sense means that the administrator's announcement had no appreciable effect on the expressed faculty attitudes toward research. But whether this lack of difference means that the announcement was not influential enough to affect faculty responses is hard to tell. It is possible that the assured confidentiality in the analysis of responses made the post-announcement group merely express their true feelings, and since the pre-announcement group and post-announcement group were two random samples from the same population, their attitudes were, as would be expected, comparable.

Another problem which could have masked the differences may be related to the sample size. Responses from the group which received the instrument by mail were particularly low and the short time between the mailing of the instrument and the announcement of the Research Development Program prevented any follow-up mailings. Since in small samples the error term is relatively large, it could have in this case masked the differences in the responses of the two groups.

C. The Attitudes Associated with Interest in Research

The third question of interest in evaluation was related to the attitudes associated with interest in research. Operationally, interest in research was defined as the expression of willingness to participate in the Research Development Program. With such definition of interest the question was raised as to the ways in which the attitudes of those who participated in the program differed from those who did not.

The participants, as was explained in Chapter III, were those who expressed interest in attending the Local Faculty Seminars. Some of the participants responded to the Semantic Differential instrument before announcing the program, and the others responded after the announcement. Table 4.4 shows the distribution of respondents by time of administration and by participation.

TABLE 4.4

DISTRIBUTION OF THE SD RESPONDENTS BY TIME OF ADMINISTRATION AND BY PARTICIPATION IN CORD

Time of Administration	Participation in CORD		
	Participants	Non-participants	Total
Pre-announcement	9	34	43
Post-announcement	12	74	86
Total	21	108	129

Comparisons among respondents differentiated by time of administration and by participation over the 56 variables (4 scale clusters x 14 concepts) were computed using multivariate analysis techniques. Table 4.5 includes a summary of the probabilities associated with the obtained F ratios. As can be seen in that table, only the F ratio associated with participation was significant at the .05 level.

TABLE 4.5

MULTIVARIATE ANALYSIS OF VARIANCE
56 VARIABLES

Source of Variance	df	F	P
Time of Administration	56,70	.94	.589
Participation	56,70	1.59	.034
Interaction	56,70	1.25	.190

To determine the specific differences in faculty responses associated with participation in the Research Development Program a survey was made of the 56 univariate F's for the participation effect in the multivariate analysis. The survey suggested that most of the differentiation was occurring within a few concepts: curriculum, testing, evaluation, experimentation and survey. Based on this, parallel multivariate analyses were performed for each concept. A summary of these analyses is given in Table 4.6.

Results of these analyses confirmed the observed pattern; the two concepts, Testing and Survey, produced significant multivariate participation effects. For each of these concepts, there were also significant univariate effects on the Intellectual Demand Cluster; the participants judged them less difficult and complex than the non-participants. The participants also judged Survey more potent and conclusive than did the non-participants.

TABLE 4.6

SUMMARY OF SIGNIFICANT DIFFERENCES BETWEEN PARTICIPANTS AND NON-PARTICIPANTS IN THE RESEARCH DEVELOPMENT PROGRAM

Concept	Cluster	Estimated Mean Scores*		P
		Participants	Non-Participants	
Curriculum	Potency	3.551	4.032	.037
Testing	Intellectual Demand	4.389	3.986	.021
Survey	Potency	4.354	3.953	.017
	Intellectual Demand	5.201	4.109	.007
Experiment	Potency	4.946	4.544	.031
Evaluation	Utility	5.993	5.462	.022

*4.0 represents neutral judgment

Univariate differences associated with participation in the Research Development Program also occurred on the Potency cluster for the concepts Curriculum and Experimentation; the participants judged Curriculum less potent and Experimentation more potent than did the non-participants. The single significant interest effect on the Utility cluster appeared for the concept Evaluation with the participants judging it to have a greater utility.

In summary the participants, compared with the non-participants, saw curriculum as less potent and stable, saw testing as more complex and intellectually demanding, saw survey as more potent and intellectually demanding, saw experimentation as more potent; and saw evaluation as of high utility.

These findings are particularly interesting. In some sense compared with the non-participants, the participants seemed to express the connotation that curriculum is subject to change, that evaluation is highly useful and that survey and experimentation are powerful tools in research and/or in affecting curricular change. At the same time, participants seemed to express the feeling that testing and survey, although desirable, are more difficult and complex. Admittedly this interpretation is highly speculative but it is also plausible. To put it differently, the participants in the Research Development Program seemed to express the idea that the curriculum is changeable and the empirical research, although demanding, is the appropriate vehicle for affecting the change.

D. Did the Faculty Seminars Fulfill Their Objectives?

Two types of faculty seminars were planned in the Research Development Program, the Local Faculty Seminars and the Intensive Research Training Seminars. Each type was expected to serve a function in the process of research development. The question of evaluation here involves an assessment of the extent to which these seminars produced their expected outcomes.

1. The Local Faculty Seminars

As explained in Chapter II these Seminars had the function of: providing the faculty with a setting for the informal exchange of ideas on research and hopefully through that interaction in the seminar members of similar interest see the advantages of team effort. Furthermore, attendance in the Seminar, being a condition to involvement in other Research Development activities served a means of defining the population of participants in the program.

The constraint that faculty attendance in the Local Seminars was a prerequisite to participation in other activities presented a problem. At the inception of the CORD Program the Research Development Officers hoped to arrange with the Chairmen of the Education Departments, not to schedule classes or meetings at some hour in the week and to hold the Seminars at that hour. This arrangement, however, did not materialize and the Seminars were held at the time convenient only to the majority of the faculty who expressed interest in attending. But this meant that some interested faculty were not able to attend and consequently were not able to participate in the other activities of the Research Development Program. To alleviate the problem, when that portion of faculty members was large, the Research Development Officers in Fredonia and in Buffalo scheduled two seminar meetings per week instead of one. But scheduling two seminar meetings was less than optimum solution. It meant that the membership of each seminar was too small to provide effective interaction.

In addition to scheduling two seminars some flexibility in requiring participation on the local seminars as a prerequisite for participation in the other components of the Research Development Program was also adopted. For example, if a faculty member participated in the seminar during the fall but was not able to participate during the spring semester because of a schedule problem, he was not barred from participation in the training workshops or from receiving funds for research.

Assessing the degree to which the seminar fulfilled their objectives was a difficult job. The programs of the local seminars were developed by local committees after surveying the interest of their members. Thus, by process the seminar programs varied from one campus to another and were presumably reflecting the interests of the members. However, the test whether the programs actually served such interests attendance records were examined. The reasoning was that, if the members saw the seminar as serving a useful function, attendance would be high and stable. This was found to be true. Attendance records showed that the number of participants did remain relatively stable.

Another dimension of evaluating the seminars was made by surveying the feelings of the seminar participants toward the function of the seminar. The survey was conducted during the second year of the program, (a copy of the survey instrument and its results as summarized by Dodd &Vase is included in Appendix F). Table 4.7 includes only a summary of the seminar objectives and the percentage of respondents who expressed an agreement that these objectives were accomplished. According to this summary, the three most accomplished objectives were motivating the participants to do research, furnishing them with research ideas, and assisting them in implementing their research ideas.

TABLE 4.7

OBJECTIVES RATED AS BEING ACCOMPLISHED IN THE LOCAL SEMINARS

Objective	Percentage* Agreed
1. Developed your research skills.	25
2. Motivated you to engage in research.	59
3. Interested you in making greater use of research findings.	34
4. Furnished you with ideas for classroom participation.	28
5. Equipped you to carry out instructional research on your classes.	13
6. Furnished you with ideas for research activities.	53
7. Assisted you in implementing a research idea.	41
8. Provided technical assistance on designing a study.	13

*Total number of respondents - 32.

The survey also provided some information on the participants' need for the purpose of planning. According to the survey the highest need was in the area of experimental design. This concern with experimental design, however, did not seem to mean a concern for statistical topics, since the participants rated the need for such topics relatively low. Judging from other highly rated statements such as "discussing the feasibility of research ideas," "determining the researchability of a question," and "determining areas of research need," the participants concern with experimental design seemed to express merely a concern for finding research ideas.

2. The Intensive Research Training Seminars

These seminars were expected to provide intensive training in research skills in a distraction free and informal atmosphere. To evaluate the outcome of training pre- and post-tests were used. The complete data for each workshop are reported in Appendix C. Table 4.8 shows only a summary of the mean achievement scores. As can be seen from the table, most workshops produced an amount of achievement gain. However, these data are mere raw scores and must be interpreted cautiously. To assess the real gains requires taking into consideration the reliability of the tests used, the regression effect, and the ceiling effect of tests. However, computing the effect of these variables for different workshops was considered too cumbersome and considering the size of the sample such computations had little likelihood to contribute more knowledge, hence it was not done.

TABLE 4.8

ACHIEVEMENT GAINS IN THE SEVEN
OFF-CAMPUS WORKSHOPS

Seminar	Mean Achievement Scores		(1) N	Mean Gain
	Pre-test	Post-test		
1	24.5	34.8	25	10.3
2	29.1(2)	39.5	23	10.4
3	19.5(2)	24.5	15	5.0
4	9.4	12.4	24	2.8
5	10.0	13.6	22	3.6
6	17.2	18.1	20	0.9
7	12.1	23.4	21	10.6

(1) N represents those who attended. In some cases a few participants did not take either of the pre- or the post-tests.

(2) Scores are summed over sub-tests used.

The degree to which the workshops fulfilled some of their secondary objectives was also assessed by Dodd and Vasi. According to their survey the workshops did provide a vehicle for the exchange of ideas among colleagues from other institutions, motivate participants to engage in research, and furnish participants with research ideas.

In summary the workshops as conducted in the Program were moderately successful. The most successful were those which adhered to the model and used semi-programed and sequential exercises. But finding the consultants who were willing to prepare such exercises was hard. Again, even with the inordinate amount of effort that went into coordinating the content of various workshops they tended to overlap and the interest of the consultants in providing a comprehensive presentation of their topics led them to cover a large amount of complex ideas in a short time, without giving the participants the time to digest these ideas. What is more, the participants who had not research ideas of their own, had difficulty relating the concepts presented to their needs.

E. The Funding of Pilot Studies

Pilot studies were considered an important component in the Research Development Program. The experiences involved in conducting these studies represent the closest approximation to those involved in conducting organized research. For that reason a great deal of effort was exerted to simulate in that component of the Research Development Program the steps involved in organized research including writing of proposals, and preparation of budgets.

Contrary to the expectations of the Local Research Development Officers, however, only a small number of faculty members applied for funds during the first half of 1967-68. To find out the reasons for such low faculty response interviews were conducted with those faculty members who expressed interest in conducting research but who did not apply for funds. The results of these interviews showed that the procedures which were established for funding, well intended as they have been, were the source of difficulty. Faculty members saw these procedures as formal and demanding.

This early detection of the difficulty prompted a revision of procedures. Once a faculty member expressed interest in conducting a study he was immediately given permission to proceed and was allocated fifty to a hundred dollars for planning. Later he was asked to submit a statement of the problem he was studying and an estimate of the budget required for completing the study. From that statement he was helped to cast his research plans in the form of a proposal. Authors of well developed proposals were also encouraged to apply for outside funds. With such changes faculty response increased considerably.

Another index of the success of the workshops involved examining attendance records. Considering the voluntary nature of attendance, it was reasoned that the participants would attend a workshop as long as they perceived its content as beneficial. Based on these records (See Appendix C), Workshops 1, 2, 6 and 7 had the highest holding power. The highest dropout rate occurred in the third and fifth workshops. Detecting the reason for dropping out is not easy. However, the most successful workshops seemed to be those workshops which used semi-programmed sequential lessons. The third workshop where the highest rate of dropouts occurred involved three separate topics and the coordination among the topics was minimal. Besides lack of coordination, the statistical topics presented in the first day of that workshop were too technical to hold the interest of the participants. The fifth workshop which also had a high dropout rate had a confounding factor. Sleeping accommodations were less than average and fatigue caused some participants to leave at the end of the first day of instruction.

A third attempt at evaluating the workshops was made through a survey conducted by Dodd and Vasi in 1969 after the completion of the fourth workshop. Unfortunately, the low response rate for the survey posed a problem in interpreting the results. Furthermore, the data were not differentiated over the various workshops. To find out the proportion of participants in each workshop who saw that workshop as beneficial the data were reconstructed in Table 4.9. Based on that table the majority of those who attended the first three workshops saw them as beneficial.

TABLE 4.9

PARTICIPANTS RATING WORKSHOPS
AS MOST BENEFICIAL

Workshop	Number of Respondents	
	Attended	Rated as Beneficial
I	8	8
II	10	7
III	4	3
IV	11	2

Unfortunately, as interest in research increased federal funds were reduced by 15% in 1968-69 and another 15% in 1969-70. And since the colleges were not able to offset the decrease in federal funds by money of their own, as was expected, the support for pilot studies had to be reduced. But all in all, the pilot study component served a useful purpose. It resulted in several papers which were read at the Northeast Educational Research Association and at the American Educational Research Association, five journal publications and several research proposals submitted for outside funding.

II. Summative Evaluation

In summative evaluation the concern was to assess the total impact of Research Development Program on the three participating colleges. Among the questions which were considered under this type evaluation were:

A . Did the CORD activities stimulate faculty involvement in research?
B . Did the CORD succeed in encouraging the administrators of the participating institutions to develop the resources and the policies necessary for research?
C . Are the outcomes of the Research Development Program proportional to its costs?

Unfortunately, only a limited amount of data can be cited here. The problem involved in this type of evaluation lies in the fact that it is hard to separate the effects of Research Development Program from the effects of other variables. Furthermore, several of the early participants in the Program left for other campuses. Despite these limitations it is the opinion of the project director that the Program did serve a useful function and did encourage some faculty participation in research.

The following presents more specific justification of this conclusion:

A. Did the Research Development Program Encourage Faculty Involvement in Research?

The Research Development Program funded thirteen pilot studies in Buffalo, fourteen studies in Fredonia and three studies in Gannon College. The participants in the Program also wrote several research proposals, four of which were funded by the Office of Education. Other participants also submitted proposals to the Research Foundation of the State University of New York.

Some points, however, must be remembered. The first point which must be kept in mind is that the project dealt with research involvement. While the definition of research was rather liberal and included development, only those projects which involved a test of a hypothesis or an application of a theory were counted. Projects, which dealt with inservice training were not counted. Some faculty members and administrators expressed the opinion that the definition of research adopted in this project is rather narrow and conservative. If that opinion is accepted then the impact of the Research Development Program must be considered more widespread than this report conveys.

The second point to be remembered is that the assessment of the impact of the Program was based on the activities of those who participated in it. Thus faculty members who did not participate in the Program but were engaged in research were not counted. If one considers the secondary effect of the Program such as creating a competitive environment which encourages non-participants to work harder to maintain their lead then the impact of the Program must be considered more widespread than this report conveys.

A third point to be remembered is that the Program was conceived to plant a seed. This evaluation represents the status of the planted seed at the termination of the Project funding. From the evidence of faculty productivity presented above one cannot help but say that the seed has shown some healthy growth. And, while no empirical data can be presented here on future growth, one can only infer that if the environment remains suitable this growth is likely to continue.

Finally, a limitation must be remembered. The Program participants were volunteers and not a random sample of small college faculty. They initially had a favorable predisposition toward research and research involvement. And while in the long run it is anticipated that competition would attract more faculty to engage in research, any generalization about the effect of the Program has to take the limitations of sampling into consideration.

B. Did the Research Development Program Affect the Desired Changes in Institutional Policies and Resources?

Among the administrative policies which the Research Development Program intended to introduce were: (1) developing institutional resources needed for research involvement, (2) rewarding research productivity, and (3) developing research oriented curricula. To what extent did the Program succeed in making these changes?

Except for the establishment of a faculty research fund at Gannon College, however, it is hard to specifically identify changes in administrative policies which can be ascribed to the efforts of the Research Development Program. Part of the difficulty is that both the College at Buffalo and the College at Fredonia are part of the State University of New York and hence their policies had always included some statements on faculty involvement in research. Thus new policy statements on the matter were perceived unnecessary.

But the existence of some general policy statements and the explicit implementation of these policies is another thing. What counts in affecting the behavior of the faculty is the degree to which they perceive the policies are actually implemented. An indirect assessment of these perceptions may be inferred from a survey conducted at the termination of the Research Development Program by Richard McCowan (see Appendix E).

According to that survey, the respondents felt that CORD's impact in this area was somewhat limited. For example on the question as to the extent the respondent felt that participation in CORD offered them credit for promotion or merit salary increase the mean rating was 1.96 indicating a low degree of agreement. On the other hand questions related to the need for resources related to research such as the availability of graduate assistants, released time for faculty involvement in research, statistical and computer assistance and secretarial help all received a mean rating above than 4, indicating that the available resources were far less than the expectations.

It is possible that the desired changes in resources were being introduced gradually. In one of Administrator's Seminar an administrator expressed the concern that the desired changes are hard to introduce since faculty governance procedures require faculty acceptance of the change before affecting them. Unfortunately the survey conducted by McCowan was not explicit enough to provide details on the degree to which the faculty perceived that these changes were taking place.

Hence one is left only with the conclusion that the resources needed for research and that recognition of faculty involvement in research were during the three years of the Research Development Program remained far below faculty expectations.

C. Are the Outcomes of the Research Development Program Proportional to its Costs?

The question of cost effectiveness of the Program was not directly assessed. In fact assessment of cost effectiveness is complex. The objective of the Research Development Program was to encourage faculty involvement in research for the purpose of introducing long range changes in education. For example, by creating favorable attitudes on the part of college faculty toward research and evaluation, we prepare more research oriented teacher education graduates. And by preparing teachers who are responsive to research more efficient, curricula can be developed for the nation's children. Also by creating educators who call for proper evaluation of educational innovations before adopting them we precipitate a reduction in the funds wasted on fads. The question of evaluating the cost effectiveness of the Research Development Program is one estimating the value of the curricular developments based on research and the amount of reduction in wasted funds which can be attributed directly to the educators who participated in the Program.

No hard data could be presented here on cost effectiveness. But it is the considered judgment of the Project Director that the Program was effective. Assuming that among all the participants in this Program only five members continued in their research involvement and assuming that each of these five faculty members imparts his attitudes toward research to only five of his students a year; in ten years the Program would have had effect on 250 teachers. Again assume that during their professional careers each of these educators would precipitate some curricular changes or intervene against adoption of some fads worth $10,000, the outcomes of the Program in ten years would be valued at $250,000. Since the total cost of the present Research Development Program was $129,000, in ten years the outcomes represent an approximate return of 100% on the investment. Admittedly these figures are hypothetical but in the opinion of the Project Director they are realistic if not conservative.

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APPENDICES

APPENDIX A

ANNOUNCEMENT OF CORD

CONSORTIUM
on
RESEARCH DEVELOPMENT

State University College, Fredonia, N. Y.
State University College, Buffalo, N. Y.
Gannon College. Erie Pa

F G B

Conducted with the aid of a grant
from
The U. S. Office of Education No 1-7 071015-3909

CONSORTIUM ON RESEARCH DEVELOPMENT (CORD)

for

**State University Colleges at Buffalo and Fredonia, N. Y.
and Gannon College at Erie, Pa.**

WHAT IS CORD?

CORD is a program sponsored by the Research and Training Division of the United States Office of Education to help "small colleges" develop their research capabilities in the field of education

WHY CORD?

CORD is a means of developing potential talents for research to help meet the needs of education.

More than at any time before, the nation is turning to education for help in solving many of the problems of society. Unfortunately the educational community lacks the manpower to answer the challenge. The preceding long years of meager support to educational research has discouraged many potential researchers from developing their skills. In some instances, graduate programs neglected to emphasize research skills among their graduates.

The need for researchers has been intensified because of the recent desire of big corporations to satisfy the educational market demands. Since the motives of these corporations are not solely academic, many fads are finding their way into the schools under the name of innovations. Such fads involve more than waste of funds, they block the path for legitimate research and threaten the confidence the public has in education when they fail to deliver what was promised of them.

WHY THE INTEREST IN SMALL COLLEGES?

Educators in small colleges have a unique role to play. They tend to be practically oriented and more sensitive to classroom problems than to basic research problems. Furthermore, through the sizable number of teachers they prepare and through their interaction with the schools they are particularly suited to disseminate research results throughout educational systems.

IS CORD EDUCATOR ORIENTED?

Essentially yes. Without the human resources, material and/or organizational facilities are worthless. But given the willingness of educators to develop their research productivity, the CORD program provides an opportunity for them to work cooperatively with their local administrators to develop the needed research resources and facilities. In fact, by agreeing to participate in CORD the leadership of the member institutions have already indicated their willingness to pursue the program objectives. The next move is now yours.

WHY A CONSORTIUM OF COLLEGES?

The idea of a consortium is a compromise between institutional and national programs. The basic reason is economy.

HOW IS THE PROGRAM ADMINISTERED?

The program involves both inter-institutional and intra-institutional activities. To facilitate such a program two organizations are required:

1. Intra-institutional committee, which consists of the local research development officer as chairman, and two (elected, appointed, or volunteer) faculty members.
2. Inter-institutional committee which consists of the project director as chairman and the other research development officers as members.

WHAT DOES THE PROGRAM INCLUDE?

The program is tri-dimensional:

1. *The Education Faculty Program;* consists of (a) three two-day, off-campus workshops in which consultants help the participants master some of the contemporary research skills, (b) weekly on-campus seminars for the exchange of ideas related to research problems and the needs of the local campuses, (c) individual consultation to the individual faculty members in developing their own research ideas, and (d) funds for interested members to help them conduct pilot studies.
2. *Administrative Officers' Program;* which consists of workshops for the administrators to study ways of (a) stimulating and rewarding interest in research, and (b) budgeting for the needed research facilities and for the reduction of faculty load when part of their time is needed for organized research.
3. *Administrative Staffs' Program;* which consists of workshops for the various members of the administrative staff to help them understand the need for generating data to be used in institutional studies and evaluation of college curricula, and to learn of the procedures recommended in monitoring research funds.

WHAT IS THE ROLE OF THE FACULTY IN CORD?

Remember, CORD is specifically designed to develop educator-researchers. Thus, without the explicit cooperation of the faculty the program is worthless. As a faculty member, then, you can make CORD serve you by making your academic needs known, suggesting topics for the seminars, pursuing an area of inquiry, and by applying for your share of research funds.

WHAT DOES CORD COST?

Only your time. Funds are available for consultants; for your travel, lodging books and instructional supplies at the off-campus seminars; and for the miscellaneous needs for conducting pilot studies.

Three two-day off-campus faculty workshops are planned as part of the first year program of CORD. In these workshops the faculty will work with consultants–researchers in studying some of the contemporary research skills. The consultants, in so far as possible, are selected from among those who have a national reputation in educational research. They have been and are being asked to plan a sequential program of activities using examples of applied research problems.

SELECTION OF PARTICIPANTS

Twenty participants will be selected for each workshop on the basis of first-come, first-served. In case of a tie a random selection will determine the winner. Openings for attending the workshops are alloted on the basis of the number of education faculty in each of the participating colleges relative to the number of the total education faculty in the three colleges. Space allotments are: 12 from Buffalo, 7 from Fredonia, and one from Gannon (other than the program officers).

Participants in the workshops are expected to stay together (no commuting), they will be paid travel expenses at 9c a mile plus $15.00 a day for room and board. In addition each participant will be given a textbook and/or the necessary instructional supplies free of charge.

To be eligible to participate you need only to indicate your interest by sending the attached application to your Campus Research Development Officer, and by attending the on-campus faculty seminars.

Needless to say, absence from campus to attend the workshops will be considered an approved absence by the administration.

CAMPUS RESEARCH DEVELOPMENT OFFICERS

Naim Sefein, *Research Development Officer at Fredonia, and Project Director.*
John Dodd, *Research Development Officer at Buffalo.*
Richard Herbstritt *Research Development Officer at Gannon.*

CONTENT OF WORKSHOPS

Only the first workshop has been preplanned. The remaining two are still open to allow for inclusion of topics suggested by the faculty. The dates for the second and third workshops given below are also tentative.

In summary the following are the main themes of the three workshops: (1) The paradigm of instructional research, (2) The role of observation in research, (3) The role of logic in defining a research hypothesis.

SCHEDULE AND LOCATION OF WORKSHOPS

All three workshops will be held at the Leisure Land Motel at Hamburg, N. Y. The first workshop is scheduled for October 13–14, 1967; the second on February 2–3, 1968; and the third on April 26–27, 1968.

APPENDIX B

FORMS USED IN DEVELOPING LOCAL FACULTY SEMINARS

1. Survey Form Used in Scheduling the Faculty Seminar
2. Survey of Interests Among Participants in Local Seminars
3. Record of Local Seminar Activities

1. Survey Form for Scheduling the Faculty Seminar

I am interested in the Research Development Program and should be able to attend the Faculty Seminar if scheduled during one of the following hours (please check the hours you prefer).

	Mon.	Tues.	Wed.	Thurs.	Fri.
12:00*					
1:00 p.m.					
2:00 p.m.					
3:00 p.m.					
4:00 p.m.					
Evening (7:30 - 9:00)					

*Would you prefer a luncheon meeting in the sense that you bring your sandwich to the meeting? _____Yes, _____No

Name______________________________

Campus Address____________________

____

Telephone_________________________

2. Survey of Interests Among Participants in Local Seminar

I. What topics would you like to have presented in the seminar?

____
____
____
____

II. What topics do you think might be used as team projects by the seminar participants?

____
____
____
____

III. What topic would you be able to share with the group?

A. Title (s) ____________________________
____
____

B. Tentative Date of Presentation (s) ____________

C. Will you also consider sharing the topic with the participants of the Buffalo and/or Gannon Seminars?
____________ (CORD will pay the travel expenses)

IV. Would you be able to suggest speakers for the Seminar? (CORD budget may permit some travel expenses but it cannot pay honoraria) ____________________________
____

V. Other Suggestions: ______________________________
____
____

____
Name of Participant

3. Record of Local Seminar Activities

Campus: ______________________________

Date: ______________________________

Topic: ______________________________

Participants: ((list)

Notes: ______________________________

APPENDIX C

DATA ON FACULTY RESEARCH TRAINING SEMINARS

(WORKSHOPS)

1. Behavioral Analysis of Applied Research (Used in Structuring Content of Workshops)
2. Guidelines for Planning Faculty Research Training Workshop
3. Workshop Programs and Evaluation Data
    a. Data on First Workshop
    b. Data on Second Workshop
    c. Data on Third Workshop
    d. Data on Fourth Workshop
    e. Data on Fifth Workshop
    f. Data on Sixth Workshop
    g. Data on Seventh Workshop

1. BEHAVIORAL ANALYSIS OF APPLIED RESEARCH

A. Measurement of Criterion Variables

B. Formulating a Research Question

C. Research Design (Control of Competing Hypotheses)

D. Sampling, Inference and Confidence

E. Library Skills

F. Editing Skills

G. Management of Research

H. Dissemination of Research Results

Naim A. Sefein
State University College
Fredonia, New York
1967

A. Measurement of Criterion Variables

Task Conditions	Student Performance
Given:	
1. statements describing curriculum content, teaching procedures, and educational objectives	a. sorts each type of statements into the correct category b. identifies statements of objectives which are stated in terms of measurable behavior c. edits inadequately expressed objectives to include performance, conditions, and degree
2. guided response items containing errors such as ambiguity, specific determiners	a. identifies the specific determiner, the ambiguous expression--etc. b. edits items to eliminate weakness
3. guided response items measuring various objectives: memorization, interpretation, application, evaluation, etc.	a. identifies each type b. edits items measuring knowledge of facts to measure higher mental processes
4. descriptions of educational decisions, e.g., general progress in school; specific learning difficulties; the need for enrichment program.	a. identifies types of tests that could be used to collect data relevant to decisions, and b. types of items most suitable to each type of test.
5. descriptions of hypothetical educational problem and procedure used in studying it.	a. identifies errors in measurement procedures b. suggests corrections

(2)

A. Measurement of Criterion Variables (cont)

Task Conditions	Student Performance
5. A definition of a trait which is not observable (hypothetical construct)	a. suggests ways of indirectly measuring the trait and explain the rationale behind the choice of various trait indicators b. constructs samples of items measuring the specified trait indicators using criteria such as frequency of behavior, intensity, diversity of situations where behavior is expressed--etc.
6. types of measurement instruments eg. a. observation scales b. rating scales c. self reports d. sociometric scales e. projective scales	a. identifies the assumptions underlying the use of each type b. describes the limitations in the kind of information assessed by each
7. descriptions of educational settings, instruments used, and samples of conclusions	a. identifies those situations where assumptions underlying the use of an instrument have not been fulfilled. b. identifies and corrects conclusions unwarranted by the type of data collected.

B. Formulating a Research Question

Task Conditions	Student Performance
Given:	
1. a broad question	a. replaces the evaluative terms with terms describing behavior indicative of the trait expressed by the evaluative term b. divides the problem into a set of smaller more definable ones c. generates as many questions as possible about the problem which call for simple answers yes; no; or a frequency count
2. a statement expressing a relationship between two sets of variables	a. identifies the antecedent and consequent variables and b. uses the identified variables in a form of syllogism "If----then".
3. a generalization based on a theory such as role of guidance in learning, reinforcement, schedules, inhibition, etc.	a. lists classroom events illustrative of the conditions expressed in the generalizations b. uses hypothetical syllogism to express statements of anticipated change in the consequent as a result of induced change in the antecedent.

C. Research Design (Control of Competing Hypotheses)

Task Conditions	Student Performance
Given:	
1. a statement of a research problem and a hypothesis	a. lists as many variables in the situation as possible b. classifies the identified variables into a) conditions b) subjects c) instruments c. identifies the variables that are to be manipulated and those to be controlled
2. a summary of a research study	a. generates competing hypotheses to the one(s) tested in the study
3. summaries of studies lacking one or more factors to internal validity	a. points out the weakness (threats to validity) b. suggests a modification of design to "correct" the errors of design
4. summaries of studies' results, and interpretations	a. points out unjustified or erroreous interpretations b. restates the interpretations to show the permissible expressions in each case

(5)

D. Sampling, Inference and Confidence

Task Conditions	Student Performance
Given:	
1. descriptions of studies	a. identifies the sampling unit used in each b. identifies the appropriate sampling unit to be used c. identifies type I error
2. the necessary data for computing Z, t, Chi square, F tests	a. computes the values of the test statistic b. finds out the probability associated with the chance occurrance of the obtained values
3. statements of null-hypothesis	a. identifies those which call for a one tail test from those which call for a two tail test b. states alternative hypotheses
4. a degree of accuracy and an estimate of parameters	a. finds out the sample size necessary to test the hypotheses at the specified power
5. brief statements of research problems showing data collected and comparisons called for by hypotheses	a. identifies suitable sample estimates to be computed b. identifies the suitable test statistic to be used in testing hypotheses

E. Library Skills

Task Conditions	Student Performance
Given:	
1. a statement of a problem	a. constructs a list of possible identifiers to be used in the search for related topics in literature
	b. surveys the summary research references and presents a summary of the state of knowledge related to the problem
	c. compiles a bibliography of related references using sources such as Psychological Abstracts, Education Index and/or Dissertation Abstracts
	d. compiles a list of identifiers to be used with the ERIC system
2. a research report	a. abstracts the report so that the abstract would include the key ideas related to every part of the study
	b. points out strength and limitations of study
3. a summary of a study	a. outlines an index system for note taking showing primary and secondary content classifications

(7)

F. Editing Skills

Task Conditions	Student Performance
Given:	
1. a deck of cards containing summaries of studies classified according to several topics	a. summarizes the studies in form which reflects (a) an **abstraction** of their content (not sequential listing), (b) presence of existing contradition, and/or (c) factors which limit the comparability of results
	b. uses a mode of documentation, in the above summary, in a consistent manner.

G. Management of Research

Task Conditions	Student Performance
Given:	
1. a description of a project with specified beginning and termination dates.	a. identififies the tasks to be performed. b. estimates the time need to complete each task. c. sequence the events in their appropriate order to show the dependencies involved. d. chart the events using PERT procedures
2. estimates of the hourlv wages, fringe benefits, overhead costs, supplies, catalog, etc.	a. estimate costs involved in the completion of various tasks in the above project.

H. Dissemination of Research Results

Task Conditions	Student Performance
Given:	
1. several abstracts of studies and a copy of Lins & Rees *Scholar's Guide to Journals of Education and Educational Psychology*, 1965.	a. identifies at least one journal suitable for publishing each study. b. identifies main features of style, length, etc. required by the identified journals.
2. abstracts of reports in various areas of education and a list of ERIC Centers.	a. matches each report with the ERIC Center most concerned with the area of content in the report.

2. Guidelines For Planning The Research Training Workshops

(An example)

Guidelines for Planning the Sixth Faculty Research Training Seminar

Topic:

The objective of the workshop is to give the participants a gestalt view of the total research proposal as a plan of action (not just as an instrument for getting money). Examples of what instruction should focus on are:

1. The identification of the problem as (a) a way of resolving the conflict in the way two theories interpret the same phenomenon; and (b) as a way of verifying the degree to which a theoretical model and its translation function in educational practice.
2. The research plan as a means of (a) testing the hypotheses specified in the problem; and (b) controlling factors other than those being studied from contaminating the results.

A sample of two research proposals shortened to highlight the major steps in their content and another detailed enough to show a reasonably finished product (small contract size) of the document would adequately serve as exercises for instruction. If possible, one of the proposals would utilize an operations research model, another a simple experimental design, and the third a survey. At least one of the proposals need also to present an example of indirect measurement of an effective variable.

Mode of Instruction

Instruction should take into account:

1. The active involvement of the learner. This may be done through the use of brief sequential exercises and through providing time for discussion.
2. A degree of truism in nature of illustrations. This may be done through the use of an actual or condensed research proposal which the participants can study, answer questions on, and possibly suggest alternatives and modifications.

3. The logic in planning and interpreting research. Statistical derivations and computations are not expected.

4. The concern of the participant with applied research. Illustrations which deal with instructional problems in schools and/or teacher training are particularly desirable.

5. The use of multiple observations. One type of observation is rarely an adequate procedure for solving a problem. Example of relevant indirect observation should be used whenever possible.

Duties of Consultants

Consultants are expected to:

1. Prepare and provide instruction.
2. Join the participants during social sessions to allow for informal exchange of ideas.
3. Construct a pre and post test measuring understanding of the concepts discussed.
4. Any other provision he might deem desirable.

Honoraria

Honoraria are available. The size of the honorarium will depend upon the amount of preparation and instruction rendered, and preferences of consultants.

Schedule

Two days starting on Thursday evening and continuing until 4:30 p.m. on Saturday. Typically, the program starts with the administration of pre tests and a banquet on Thursday evening. Friday schedule includes four instructional sessions (75 minutes each) during the day, and informal discussion in the evening. Saturday meetings consist of three instructional sessions, followed by a session for evaluation.

Nature of Participants

Twenty faculty members from three colleges: the State University Colleges at Buffalo and at Fredonia, N.Y.; and Gannon College at Erie Pa. As a rule, the participants have a wide range of preparation and interest. Their work involves teaching and supervision in some phase of teacher preparation. Their experiences in research tend to be limited in nature.

Suggested Dates

No definite date has been set. It is preferable, however, that the workshop would take place in the second half of November, or early in December 1969.

3. Workshops Programs and Evaluation Data

Achievement Tests and Instructional Materials are not included because of printing costs. However, xerox copy may be obtained from the Project Direct for cost.

a. Data on First Faculty Workshop

Participants

Program

Test Scores

First Faculty Workshop
Participants

State University College at Fredonia, New York

Mr. Robert Heichberger
Mrs. Alice Hilton
Mr. John Connelly
Miss Phyllis Dorman
Dr. Donald McFarland
Dr. Puran Rajpal
Dr. Anthony Deiulio
Dr. Charles Colvin
Mr. Arthur Stauffer
Dr. Naim Sefein

State University College at Buffalo, New York

John Dodd
John Vasi
William Burns
Kishio Matoba
Ed Panther
Estelle Kane
Carman Iannacone
Gary Zimmerman
Jason Brunk
Ed Turner
Paul Thoms
Frances Tyau
Carol Little
William Deitzel

Gannon College, Erie, Pennsylvania

Kenneth Gamble
Richard Herbstritt

PROGRAM

FIRST FACULTY WORKSHOP
Leisure Land Motel
Hamburg, New York
October 12-14, 1967

October 12, 1967

6:30 P.M.	Registration
7:30 P.M.	Dinner
8:30 P.M.	Introduction
8:40 P.M.	Pretest

October 13, 1967

8:45 A.M.	Educational Research and Development
9:30 A.M.	Components of the Research Proposal
10:30 A.M.	Coffee
11:00 A.M.	Types of Research Variables
12:00 Noon	Lunch
1:30 P.M.	Types of Research Studies
2:15 P.M.	Introduction to Operational Objectives
3:15 P.M.	Coffee
3:40 P.M.	Describing Educational Outcomes
4:45 P.M.	Adjournment
8:00 P.M.	Informal Discussions

October 14, 1967

8:45 A.M.	Constructing Educational Outcomes
10:00 A.M.	Coffee
10:30 A.M.	Instructional Specification and Conditions of Learning
11:30 A.M.	Educational Criterion Measures
12:15 P.M.	Lunch
1:15 P.M.	Experimental Error and the Instructional Environment
2:00 P.M.	Threats to the Validity of Educational Studies
3:00 P.M.	Coffee
3:20 P.M.	Posttest
4:30 P.M.	Adjournment

FIRST FACULTY WORKSHOP

TEST SCORES

Participants	Pre	Post	Gain
1	32	43	11
2	23	42	19
3	19	41	22
4	33	41	8
5	29	41	12
6	20	40	20
7	31	40	9
8	29	36	7
9	29	36	7
10	31	36	5
11	21	36	15
12	20	36	16
13	24	34	10
14	22	34	12
15	29	33	4
16	22	33	11
17	19	32	3
18	27	32	5
19	24	31	7
20	21	31	10
21	20	29	9
22	21	28	7
23	22	28	6
24	22	24	2
25	23	22	-1
Mean	24.52	34.76	10.24

b. Data on Second Faculty Workshop

Participants

Program

Test Scores

Second Faculty Workshop Participants

State University College at Fredonia, New York

Naim Sefein
Arthur Stauffer
Douglas Rector
Charles Colvin
Anthony Deiulio
Donald McFarland
Puran Rajpal
Alice Hilton

State University College at Buffalo, New York

N. Pirowski
C. Iannaccone
G. Zimmerman
R. Krueger
Brewer
J. Bruno
K. Matoba
J. Dodd
M. Smith
E. Panther
Fink
J. Vasi
E. Kane
R. Sugarman
D. Carter
P. Thoms
C. Kaltsounis

Gannon College at Erie, Pennsylvania

Richard Herbstritt
Kenneth Gamble
Charles Lundy

PROGRAM

SECOND FACULTY WORKSHOP
Leisure Land Motel
Hamburg, New York
February 29-March 2, 1968

February 29, 1968

6:30 P.M.	Registration
7:30 P.M.	Dinner
8:30 P.M.	Introductory session followed by an informal discussion on the emerging programs of the U.S.O.E.--Dr. John Sokol

March 1, 1968

8:00 A.M.	Breakfast
8:45 A.M.	Criterion: Observation and Measurement I Dr. Howard Sullivan
10:15 A.M.	Coffee
10:45 A.M.	Criterion: Observation and Measurement II
12:00 Noon	Lunch
1:30 P.M.	Criterion: Observation and Measurement III
3:00 P.M.	Coffee
3:30 P.M.	Criterion: Observation and Measurement IV
6:00 P.M.	Dinner
7:30 P.M.	Avenues of Financial Support for Research and Development Projects--Dr. James Colomey

March 2, 1968

8:00 A.M.	Breakfast
8:45 A.M.	Micro-teaching as a Research Tool--Dr. Kevin Ryan
10:15 A.M.	Coffee
10:45 A.M.	Micro-teaching
12:00 Noon	Lunch
1:30 P.M.	Micro-teaching
3:00 P.M.	Coffee
3:30 P.M.	Final session and evaluation

SECOND FACULTY WORKSHOP

TEST SCORES

	Part I			Part II		
Participants	Pre	Post	Gain	Pre	Post	Gain
1	17	22	5	15	16	1
2	15	23	8	18	18	0
3	17	24	7	12	18	6
4	16	19	3	15	19	4
5	19	19	0	5	16	11
6	21	25	4	11	19	8
7	18	24	6	15	19	4
8	22	24	2	6	17	11
9	18	18	0	14	18	4
10	19	21	2	10	18	8
11	15	20	5	9	16	7
12	21	19	-2	12	18	6
13	20	24	4	10	16	6
14	13	25	12	13	17	4
15	22	27	5	11	16	5
16	23	23	0	11	18	7
17	11	22	11	16	18	2
18	22	25	3	9	19	10
19	11	17	6	7	18	11
20	18	26	8	13	14	1
21	15	24	9	14	15	1
22	15	18	3	--	--	--
23	13	22	9	--	--	--
Mean	17.4	22.2	4.8	11.7	17.3	5.6

c. Data on Third Faculty Workshop

Participants

Program

Test Scores

Third Faculty Workshop
Participants

State University College at Fredonia, New York

Puran Rajpal
Charles Colvin
Arthur Stauffer
Naim Sefein
Douglas Rector

State University College at Buffalo, New York

J. Brunk
John Vasi
John Dodd
Gary Zimmerman
Esther Kane
Frances Tyan
Emery Brewer
Donald Carter
Ed Panther

Gannon College at Erie, Pennsylvania

Kenneth Gamble
Richard Herbstritt

PROGRAM

THIRD FACULTY WORKSHOP
Leisure Land Motel
Hamburg, New York
April 25-27, 1968

April 25, 1968

6:30 P.M.	Registration and Reception
7:30 P.M.	Dinner
8:30 P.M.	Introductory Session (Pre-test)
9:30 P.M.	Social Hour

April 26, 1968

8:00 A.M.	Breakfast
8:45 A.M.	1. Dr. Halpern
10:15 A.M.	Coffee
10:45 A.M.	2. Dr. Halpern
12:00 Noon	Lunch
1:30 P.M.	3. Dr. Taylor
3:00 P.M.	Coffee
3:30 P.M.	4. Dr. Taylor
6:00 P.M.	Dinner
7:30 P.M.	Informal Discussion (The Research Proposal) Drs. Halpern, Taylor

April 27, 1968

8:00 A.M.	Breakfast
8:45 A.M.	5. Dr. Taylor
10:15 A.M.	Coffee
10:45 A.M.	6. Dr. Millman
12:00 Noon	Lunch
1:30 P.M.	7. Dr. Millman
3:00 P.M.	Coffee
3:30 P.M.	Final Session (Post-test)

THIRD FACULTY WORKSHOP

TEST SCORES

Participants	Part I			Part II			Part III		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
1	2	9	7	7	10	3	3	5	2
2	5	--	--	6	--	--	2	--	--
3	4	--	--	9	--	--	2	--	--
4	7	7	0	9	11	2	3	4	1
5	6	8	2	10	8	-2	1	4	3
6	8	8	0	11	11	0	1	3	1
7	8	9	1	11	7	-4	4	3	-1
8	9	11	2	5	7	2	1	2	1
9	9	9	0	13	13	0	4	5	1
10	9	--	--	11	11	--	1	--	--
11	10	14	4	10	10	1	4	5	1
12	10	14	4	9	9	3	1	5	4
13	12	15	3	11	11	3	4	4	0
14	13	--	--	6	6	--	3	--	--
15	--	9	--	--	--	--	--	3	--
Mean	8.0	10.3	2.1	9.1	10.3	.80	2.4	3.9	1.4

d. Data on Fourth Faculty Workshop

Participants

Program

Test Scores

Fourth Faculty Workshop Participants

State University College at Fredonia, New York

Charles Colvin
John Glenzer
Robert Heichberger
Alice Hilton
Kenneth Nelson
Puran Rajpal
George Roberts
Arthur Stauffer
Naim Sefein

State University College at Buffalo, New York

John Dodd
Richard McCowan
Ronald Cohen
Donald Carter
John Vasi
Philip Reiss
Freda Carnes
Herbert Zeister
David Williams
John Bruno
R. B. Simpson
Jason Brunk

Gannon College at Erie, Pennsylvania

Richard Herbstritt
Kenneth Gamble
Robert Wehrer
Carmen Ivanenson

Fourth Faculty Workshop - Program

SCHEDULE OF EVENTS

Thursday, November 14, 1968

6:30 p.m. Registration and Dinner
8:30 Introductory Session
9:30 Social Hour

Friday, November 15, 1968

8:45 a.m. Introductory Presentation on IPI
- (a) Delimitations of procedure and applications
- (b) Selected principles of learning
- (c) Some specific hypotheses
- (d) The Glaser Model - its components

10:45 Defining and Analyzing Objectives
- (a) Questions on Session I
- (b) Relationship of instructional objectives to content analysis
- (c) Statements of objectives
- (d) Analyzing components of behaviors through flowcharting techniques
- (e) An example and an assignment

1:30 p.m. Constructing Sequence and Structure Charts
- (a) Questions and review
- (b) Charts: their construction & use
- (c) Participants work on a given problem

3:30 Work on Flow Charts and on Sequence & Structure Charts
- (a) Questions and review
- (b) Individual work and consultation

7:30 IPI Movie and Questions
9:00 Social Hour

Saturday, November 16, 1968

8:45 a.m. Further Development and Exercises on Use of Flow Charts
- (a) Exercises
- (b) Individual Consultation

10:45 A Research and Development Approach to Improvement of Education
- (a) Review of principles & hypotheses
- (b) Rationale for work of an R & D Center
- (c) Development related research

1:30 p.m. Using Research and Evaluation Data to Study Hypotheses
- (a) IPI Evaluation Program
- (b) Formative Evaluation - using observation, data, etc.
  - using test data
- (c) Studying structure and sequence

3:30 Evaluation
4:30 Adjournment

FOURTH FACULTY WORKSHOP
TEST SCORES

Participants	Pre	Post	Gain
1	11	--	--
2	12	--	--
3	6	--	--
4	4	12	+8
5	6	--	--
6	12	16	+4
7	9	11	+2
8	10	14	+4
9	8	15	+7
10	9	10	+1
11	11	15	+4
12	9	--	--
13	13	13	0
14	9	12	+3
15	7	--	--
16	12	--	--
17	12	13	+1
18	8	--	--
19	10	18	+8
20	9	13	+4
21	11	10	-1
22	10	8	-2
23	9	8	-1
24	-	11	--
Mean	9.4	12.4	2.8

e. Data on Fifth Faculty Workshop

Participants

Program

Test Scores

Fifth Faculty Workshop
Participants

State University College at Fredonia, New York

- Puran Rajpal
- Charles Colvin
- John Glenzer
- Douglas Rector
- Naim Sefein

State University College at Buffalo, New York

- John Dodd
- Henry Olsen
- David Williams
- David Petras
- Joyce Swartney
- William Woodward
- Manon Smith
- Martha Brown
- Robert Meisand
- John Fleming
- Regina Starzl
- Muriel Santilli
- Frances Tyau
- Alden Smith

Gannon College at Erie, Pennsylvania

- Richard Herbstritt
- Kenneth Gamble

Fifth Faculty Workshop - Program
Workshop in the Design and Development of an Educational System

Schedule

Thursday, March 27		
8:00 - 9:30	Opening Comments	Sefein
	Pretest	
	Introduction to Systems Analysis	Forbes
	Examples of Administrative Applications of Operations Analysis	Anderson
9:30 -	Informal Session	
Friday, March 28		
9:00 - 10:15	Introduction to the Workshop Problem: Model Elementary Teacher Education Program	Anderson
	Small Group Sessions: Identifying System Components and Variables	Anderson Forbes Fortune
10:15 - 10:30	Coffee Break	
10:30 - 12:00	Reports of Small Groups	
	System Conceptualization	Forbes
	Inherent Decisions in Building Evaluative Bases	Fortune
LUNCH		
1:15 - 3:00	Network Concepts	Forbes
	Small Group Sessions: System Network	Anderson Forbes Fortune
3:00 - 3:15	Coffee Break	
3:15 - 5:00	Reports of Small Groups	
	Simulation	Anderson
DINNER		
7:00 -	Film: Quiet Revolution	
	General Discussion	

Schedule (Cont.)

Saturday, March 29

9:00 - 10:30	Information System	Anderson
10:30 - 10:45	Coffee Break	
10:45 - 12:15	The Need to Consider:	
	Evaluation	Fortune
	Cost Analysis	Forbes
LUNCH		
1:15 - 3:00	Summary	Anderson Fortune
3:00 - 3:15	Coffee Break	
3:15 - 3:45	Post-test	
3:45 -	Closing Remarks	Sefein

FIFTH FACULTY WORKSHOP
TEST SCORES

Participants	Pretest	Posttest	Gain
1	7	10	3
2	12	14	2
3	13	-	-
4	9	11	3
5	11	-	-
6	13	15	2
7	5	-	-
8	11	-	-
9	13	-	-
10	11	16	5
11	10	14	4
12	13	-	-
13	7	12	5
14	8	-	-
15	9	13	4
16	7	-	-
17	7	14	7
18	-	16	-
19	-	14	-
20	-	13	-
21	14	14	-
22	-	15	-
Mean	10.0	13.6	3.6

f. Data on Sixth Faculty Workshop

Participants

Program

Test Scores

Sixth Faculty Workshop
Participants

State University College at Fredonia, N.Y.

Harold Roeder
George Roberts
Samuel Peng
Naim Sefein
Puran Rajpal
Eric Collins
Ronald Hull
David Dingledy

State University College at Buffalo, N.Y.

Marguerite Smith
Ronald Ruess
Richard McCowan
June Spero
Frank Salvamose
Frances Tyau
Jenny Constantino
Donald Carter
Gloria Martone
Duane Munderson
Charles Burdette

Gannon College at Erie, Pennsylvania

Robert Wehrer
Richard Herbstritt

Sixth Faculty Workshop

Program

Thursday, December 4, 1969

6:00 p.m.	Registration and Refreshments
7:30	Dinner
8:30	Introductory Session and Pretest
9:30	Social Hour

Friday, December 5, 1969

8:00 a.m.	Breakfast
8:45	Orientation to Structure and Content of the Session Purposes of Research
10:15	Coffee Break
10:45	Identification and Formulation of Research Problems Specification and Justification of Objectives
12:30 p.m.	Lunch
1:30	Logical Structure of the Study Role of Hypotheses and Questions in Research Procedures
3:00	Coffee Break
3:30	Related Sciences, Knowledge and Practices Research Design or Investigatory Plan
6:30	Dinner
7:30	Considerations in Writing Research Proposals

Saturday, December 6, 1969

8:00 a.m.	Breakfast
8:45	Identification and Selection of Units of Observation Methods of Data Collection
10:15	Coffee Break
10:45	Data Analysis Techniques
12:30 p.m.	Lunch
1:30	Research Information and Conclusions Writing a Research Report Summary of Workshop
3:00	Coffee Break
3:30	Posttest

SIXTH FACULTY WORKSHOP

TEST SCORES

Participant	Pre-test	Post-test	Gain
1	16	20	4
2	17	18	1
3	18	20	2
4	21	20	-1
5	21	22	1
6	14	18	4
7	19	19	0
8	14	17	3
9	17	—	-
10	12	9	-3
11	12	8	-4
12	18	18	0
13	17	18	1
14	24	22	-2
15	20	20	0
16	18	20	2
17	16	18	2
18	18	20	2
19	17	—	-
20	14	18	4
Mean	17.2	18.1	0.9

g. Data on Seventh Faculty Workshop

Participants

Program

Test Scores

Seventh Faculty Workshop Participants

State University College at Fredonia, N.Y.

David Dingledy
Eric Collins
Bonnie Star
Samuel Peng
Naim Sefein
John Connelly
Harold Roeder
Puran Rajpal

State University College at Buffalo, N.Y.

Gloria Martone
Jenny Constantino
Donald Carter
Charles Burdette
Frances Tyau
Bea McInerney
Thomas Morrissey
Darrell Young
Clara Wischner

Gannon College at Erie, Pennsylvania

Robert Wehrer
Richard Herbstritt

Consortium on Research Development

Seventh Faculty Workshop
March 19-21, 1970

Schedule of Events

Thursday, March 19

6:00 PM	Registration and Refreshments
7:30 PM	Dinner
8:30 PM	Overview session - "Nature of Project Management and Project Management Model"-Desmond L. Cook Pre-test
9:30 PM	Social Hour

Friday, March 20

8:00 AM	Breakfast
8:45 AM	"Management Functions and Processes"-Desmond L. Cook
10:15 AM	Coffee Break
10:45 AM	"Systems Theory and Principles"-Greg Trzebiatowski
12:30 PM	Lunch
1:30 PM	"Establishing Project Objectives"-Desmond L. Cook
3:00 PM	Coffee Break
3:30 PM	"DevelopingWork Flow"-Greg Trzebiatowski
6:00 PM	Dinner
7:30 PM	"Problems and Procedures in Developing Project Schedules"-Desmond L. Cook

Saturday, March 21

8:00 AM	Breakfast
8:45 AM	"Planning for Cost Evaluation"-Desmond L. Cook
10:15 AM	Coffee Break
10:45 AM	"Control Theory and Project Evaluation"-Greg Trzebiatowski
12:30 PM	Lunch
1:30 PM	"Organization for and Implementation of Project Management Systems"-Desmond L. Cook and Greg Trzebiatowski
3:00 PM	Coffee Break
3:45 PM	Summary of Presentation
4:30 PM	Posttest

Instructors: Dr. Desmond L. Cook, Director, Educational Project Management Center, College of Education, The Ohio State University
Dr. Gregory Trzebiatowski, Faculty of Educational Development, College of Education, The Ohio State University

SEVENTH FACULTY WORKSHOP
Test Scores

Participants	Pretest	Posttest	Gain
1	5	18	13
2	7	21	14
3	14	24	10
5	14	19	5
6	7	18	11
8	8	--	--
9	12	25	13
10	16	28	12
11	15	--	--
12	12	27	15
13	9	--	--
14	12	16	4
15	24	30	6
16	23	--	--
17	19	25	6
18	13	25	12
19	12	28	14
20	22	--	--
21	10	24	14
Mean	12.1	23.4	10.6

APPENDIX D

MATERIALS USED IN FUNDING PILOT STUDIES

1. Guide for Submitting Research Proposals
2. A Checklist for Evaluating Research Proposals
3. Reviewer's Report Sheet
4. Procedural Guidelines for Recipients of Funds for Pilot Studies

1. Guide for Submitting Research Proposals

CORD Program

I. Title of the study

II. Name

III. Background of the problems to be investigated.

The first section of the body of the proposal should indicate the relation of this study to the developing stream of educational thinking. This statement will rarely be more than 400 words long. It may discuss the prior studies in the same area, a field situation to which the study relates, or the conceptual framework out of which the study arises. This section should make clear why the study is of value in extending our command of educational theory and practice.

IV. Problems to be investigated

The specific assignment to be undertaken should be stated explicitly in this section. This involves definition of any crucial terms or concepts involved in defining the problem, and a statement of the major problems to be investigated. One of the best ways to state the problem is to list one or more questions which the study is intended to answer or to list hypotheses to be tested.

V. Design of the study

This section should explain exactly how the study is to be conducted. It will be necessary to define the specific questions to be answered in operational terms. This statement should be as specific as possible. The following points must be considered.

a. Sources of data -- What persons, documents, or other sources will be used in gathering data for the study? It is necessary to indicate the approximate number of cases. The proposal should discuss what generalizations are possible from a sample of the type used.

b. Procedures for collecting data -- The proposal should describe in detail the procedure to be used to obtain data. The discussion should point out what precautions are being taken to ensure objectivity, reliability and validity.

c. Treatment of data -- In some studies this section may be brief where treatment follows routine and well-known methods; in other studies it is necessary to explain at length how one intends to proceed from his data to his conclusions. Any notable assumptions made in the study should be made clear. It is not important to list a large number of conventional assumptions, but it is well to indicate what assumptions about education, human nature, or the data used are necessary and critical in interpreting the data and in accepting the findings of the study.

VI. Significance of the study. This statement is an extension of the statement of the problem laid down under III. In about 100 words, indicate the importance of the investigation for educational theory and practice.

VII. Expected Budget.

2. A CHECKLIST FOR EVALUATING RESEARCH PROPOSALS

A scientific study must be conducted according to high standards of accuracy in the making of observations and the analysis of data. The report must be comprehensive and clear enough to permit replication. When evidence of bias, confusion, or error is found in a research report, the creditability of the results and the researcher are called into question.

To help the reader critically evaluate the research literature he reads and to serve him and maintain quality in his own work and improve his chances of receiving support, the following checklist is provided.*

Title of the Project

1. Does the title precisely identify the area of the problem?
2. Does the title include superfluous and/or catchy or misleading phrases?

Statement of Problem

1. Has an analysis been made of the facts and explanations related to the problem, and have the relationships between these factors been explored?
2. Does the statement of the problem encompass the relevant facts, which the analysis indicated as having a bearing on the problem?
3. Is the problem statement expressed unambiguously in an interrogative or declarative sentence?

Significance of the Problem

1. Does the problem possess potential value in helping to solve theoretical or practical educational problems?
2. Does the problem, refine, verify, revise, or extend the findings of existing research in respect to either the content or the method?

Review of the Literature

1. Have previous studies been evaluated in regard to the adequacy of their sample, faulty techniques, and/or unwarranted conclusions?

2. Has the background of the earlier studies been developed to show that the existing evidence does not solve the "present" problem adequately?

3. Does the review of the literature merely present studies in a chronological order? Or does it establish a theoretical framework, which weaves pertinent findings into a network of relationships, reveals existing gaps in knowledge, and prepare the way for the logical development of the hypothesis?

Statement of Assumptions

1. Are the assumptions on which the hypotheses are predicted made explicit?

Statement of Hypotheses

1. Are the hypotheses expressed in a way which makes clear the variables and the relationship to be tested?

Definition of Terms

1. Are the variables defined in terms of observable behavior?

2. Are the concepts used consistently as defined through out the report?

Procedural Considerations

1. As an accurate explanation of the method and tools used to test the hypotheses given? Are the reasons for choosing them made clear? Is this information complete enough so that another worker can replicate the study from the description given in the report?

2. Do the suggested procedures collect the evidence with a minimum of effort or are equally effective but simpler ones available?

3. Are the assumptions that underly the use of the data gathering devices fully met in this study?

4. Does the report describe the source of data?

5. Does the report describe the number and kind of subejcts, objects, and materials used?

6. In Descriptive Studies:

   a. Is the research design adequate to obtain the specific data required to test the hypothesis?

   b. Has precaution been taken to establish detailed observational conditions, standardizing questions, making observation schedules, organizing procedures for recording data and checking the reliability of the source materials so as to avoid collecting data that are the product of perceptual errors, faulty memory, deliberate deception, and/or unconscious bias?

7. In Experimental Studies:

   a. Have potential sources of threats to internal and external validity been checked, noted, or avoided?

   b. Is the investigator in a position where he can manipulate the independent variable or is he in a situation where he can only observe the phenomenon and search back for variables that may have contributed to its occurrence?

   c. If the subjects in the experimental group are self-selected (e.g. those who take a special class) has a consideration been given to what this will do to the equivalency of the controlled and experimental groups?

   d. Is the level of significance specified?

Sampling

1. Does the report describe the population that is involved in the study?

2. Do the control and experimental groups come from the same population?

3. Are the randomization techniques employed to select the subjects from the population?

4. Are randomization techniques used to assign subjects, teachers, observers, equipment, rooms, etc. to treatment groups?

5. Is the sample sufficiently large and representative?

Instrumentation

1. Do the instruments possess the reliability and validity required for the research purpose? Are the instruments and test norms appropriate for the sample of subjects in the study (age, ability, sex, etc.)?

2. Are the tests appropriate for the time available for their administration and the conditions under which they are to be administered?

3. Do the raters possess the necessary background and information for the job? Are they predisposed in some direction concerning the phenomenon being studied?

Analysis of Data

1. Are the procedures designated for data analysis appropriate to the type of data and questions involved?

2. Are the assumptions underlying the chosen statistical tests being met?

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* This list is an abbreviated and a modified version of that given in Van Dalen, D. B., Understanding Educational Research: An Introduction, Revised Ed., New York: McGraw Hill 1966 (ch.16).

3. REVIEWERS REPORT SHEET

Title of Proposal: ____________________

____

Statement of Problem: ____________________

____

____

Significance of the Problem

a. As an extension of scientific knowledge ____________________

____

b. As contributor to the solution of a practical problem

____

Review of the Literature: ____________________

____

____

Assumptions: ____________________

____

Hypotheses: ____________________

____

Definition of Terms: ____________________

____

Procedural Considerations: ____________________

____

____

Sampling: ________________________________

____

Instrumentation: ________________________________

____

Collection of Data: ________________________________

____

Analysis of Data: ________________________________

____

General Planning:

a. *Cost estimates:* ________________________________

____

b. *Time estimates:* ________________________________

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Others: ________________________________

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4. PROCEDURAL GUIDELINES
FOR
RECIPIENTS OF FUNDS FOR PILOT STUDIES
UNDER THE RESEARCH DEVELOPMENT PROGRAM

The following is a summary of the regulations of the U.S. Office of Education and those of the Research Foundation, affecting the execution of the Grant under which your project is funded. Please adhere to these regulations. Anytime you are in doubt, call your Campus Research Development Officer or the Project Director.

Scope of the Work

The work to be conducted shall be consistent with the proposal submitted and approved by the Inter-Institutional Committee. No change in the use of funds shall be made without prior approval of the committee.

Reports

The grantee shall provide the Project Director with a report of the completed study or the degree of progress made in the study before May 15, 1969.

Copyright Regulations

a. The grantee has the right to use and/or publish the results of his work.

b. Limited copyright of materials produced in connection with a study is possible under some conditions. (If interested, inquire on details.)

c. "Any copyrightable materials produced under the Grant shall be placed in the public domain as expeditiously as possible."

d. "The Grantee shall grant the Government a royalty-free, non-exclusive, and irrevocable license to use in any matter materials not first produced in the performance of the Grant, but which is incorporated in the materials thereunder. The grantee shall advise the Grants Officer of any such material known to it not to be so licensed under this condition."

Purchase of Equipment

No purchase of durable equipment shall be made from the funds without prior permission from the U.S. Office of Education.

Travel

Travel is governed by the same policies followed by SUNY (10 cents a mile when private car is used, $16.00/day for room and board. Receipts of tolls, hotels, and cost of public transportation are necessary.)

(Separate meal rates are: 1. Breakfast: $1.50, Lunch, $1.65, and Dinner: $4.35; Full day Meals- $8.00)

Clearance of Forms

To permit proper monitoring and clearance, the Grantee is to submit to the appropriate Project Officer, prior to use, five copies of all tests, questionnaires, interview schedule or guides, and rating scales which are to be employed in collecting data from 10 or more individuals or organizations. A brief report of related information (such as purposes of the study, relevance of the data gathering instruments to those purposes, nature of the sample, number of respondents, burden of respondents, etc.) must accompany the copies of the instrument in accordance with directions from the Office of Education.

EXCEPTIONS (a) Copies need not be submitted of conventional instruments which deal with solely (1) cognitive functions or technical proficiency (e.g. scholastic aptitude, school achievement, etc.) or (2) routine demographic information, (3) routine institutional information, but a report of the "related information" (as specified above) concerning the particular data-gathering instrument must be supplied to the Project Officer in order to permit appropriate monitoring and clearance.

(b) Ordinary classroom tests employed in the development of a new curriculum or as part of the regular instructional routine constituting part of the project for which funds are granted, need be neither reported not submitted; but final tests employed in such a project, serving purposes of evaluation; must be reported; and if significantly unusual in such essential features as content, directions, form of response, etc. must be submitted in five (5) copies.

Expenditures:

1. All purchase orders, time sheets, and travel forms must carry the Research Foundation of SUNY Project No. 24-85A-42.
2. You may purchase your needs directly asking the supplier to ship the order to you, but make the bill payable to the Research Foundation of SUNY. When you receive the merchandise, initial the bills indicating your receipt of them, and mail them to the Project Director of Fredonia for authorization of payment.
3. Minimum rate for employment of students on the Research Foundation funds is $1.60 an hour.

APPENDIX E

DATA ON ADMINISTRATIVE LEADER'S SEMINARS

1. Consortium on Research Development : Program Rationale
2. Handbook of Policies Affecting Faculty Involvement in Organized Research (An Outline)
3. List of Issues Discussed in the Seminars

CONSORTIUM

ON

RESEARCH DEVELOPMENT

FOR

State University College at Fredonia
State University College at Buffalo
Gannon College at Erie

PROGRAM RATIONALE

Naim A. Sefein
Project Director

U.S. OFFICE OF EDUCATION
Grant No: OEG-7-071015-3909 (010)

This report intends to provide the administrative leaders of the cooperating institutions with a brief examination of the rationale behind the selection of CORD activities as a means of enhancing research productivity among the participating colleges.

While some informal communications have preceeded this report, it is felt that since CORD deals with institutional changes, periodically reviewing the program with the leaders of the participating institutions is essential to assure the pursuit of common goals.

CORD: A Strategy for Change

The Research Development Program is based on the premise that research productivity is an institutional goal. To help the participating institutions achieve this goal, the coordinators of CORD reviewed the educational literature regarding the determinants of research productivity and the procedure that are considered influential in affecting the desired change.

After completing the review, the principles of Systems Analysis and Operations Research were used to develop a comprehensive program to affect the change and to monitor its progress. Essentially, the process included: (a) comparison of the desired and the existing conditions, (b) the comparison of various modes of introducing the change, (c) the selection of those procedures which promised higher probability for success, and (d) the development of observational procedures to monitor the progress.

For the purpose of this report, however, the following discussion limits itself to a summary of the rationale behind the selection of activities in the proposed program:

A Basic Premise:

1. In CORD, the assumption is made that the participating institutions consider research productivity an institutional objective.

The Problem:

2. The fulfillment of this objective in educational research, however, is difficult under the present conditions. The

difficulty in fulfilling this objective is due to the fact that most education faculty are not academically prepared to pursue research. With the long history of lack of support to educational research, universities did not require students to seek training in research methods and thus, many who are now members of the education faculties did not include research techniques as part of their graduate programs. This limited preparation in research is especially true among those individuals who teach in small colleges, since traditionally small colleges have concerned themselves with almost exclusively teaching and service.

3. Because of possible negative connotations associated with the admitting to a lack of preparation for research, teacher education faculties usually cite the heavy teaching loads in small colleges and the demands of providing quality instruction as the reasons for their lack of involvement in research. While these are truly handicapping conditions, this response must be viewed as a socially acceptable but an incomplete explanation.

Some Incomplete Solutions:

4. Taking this socially acceptable response at face value, and reducing the teaching load, is an incomplete answer to the problem of a need for affecting the change. It can only succeed in exerting pressure on the faculty- a pressure which many will resist. Competing in activities for which an individual is not prepared is an emotionally threatning and frustrating experience, and like all people, faculty members will try to avoid such experiences.

5. Other modes of applying pressure, such as denying to those who do not engage in research, the expected increases in salary, are also likely to produce little or no positive effect. Pressure is not the proper substitute for the needed solution, namely, providing training and encouragement. In fact, pressure, when not accompanied by the appropriate mode for correcting the gap in research training, will produce undesirable effects on the members of the faculty. It will produce frustration which in turn will result in resentment, indifference, or escape.

Escape takes the form of either complete withdrawl from the challenge or of engaging in pseudo-academic behavior. Other modes of adjustment to frustration by the faculty include counteracting the pressure with another pressure, such as attacking the institution and accusing it of ignoring instruction, an accusation which could be damaging to the reputation of the institution.

6. Ignoring the incumbent members of the faculty and employing new ones to engage in research, whether independent individuals or as members of an office for educational research, is also an incomplete solution. It suffers from the weakness of inducing competition, jealousy, and dissociation among tenure faculty and the new members. Research, on the contrary, requires a congenial environment, one which is characterised by a spirit of cooperation among all members of the institution.

7. Although developing faculty skills in research is essential to research productivity, it alone is also an insufficient solution. As a rule, small colleges lack many of the resources needed in organized research, and its operational procedures which were established before research involvement became a goal, are likely to conflict in some respects with the demands of research. Unless these resources and policies are revised to take the new role into consideration, they are likely to produce a threat to research productivity. A new researcher is in need of help and can easily be discouraged by administrative obstacles.

The Proposed Solution:

8. Taking into account the above conditions, the solution to the problem of increasing research productivity then, is one which involves:

   a. Making it known to all that the institution considers both research and quality teaching as equally important faculty responsibilities.

   b. Providing the incumbent faculty with the opportunity for acquiring the research skills which they lack.

   c. Developing the personnel policies which will differentially reward those who engage in research in proportion to the quality of their academic products; and which will discourage those who engage in pseudo-academic efforts.

d. Developing educational programs which require their students to engage in research, and which attract capable faculty and students to the campus.

e. Developing the institutional resources and the administrative procedures which enhance faculty involvement in organized research.

9. The effectiveness of the solution, however, depends on more than merely introducing the above changes. It depends upon the proper sequencing of its constituent elements. Restating the matters as an independency-dependency relationship, the reasoning behind the solution implies that: (a) the incentive for faculty members to develop their research skills depends upon the degree to which the institutional leadership is explicitly committed to research, as an all-college objective: (b) the willingness of faculty members to compete for outside funds depends upon the degree to which the institutional leadership is able to facilitate this process through providing the relevant administrative aids and through developing the necessary resources; and (c) the concern of the faculty with the pursuit of academic excellence depends on the ability of the leadership to establish measures to evaluate academic productivity and to differentially reward members of the faculty in relation to the quality of their products.

10. Equally important to the availability of academic and physical resources in affecting the change in research productivity, is the mode of introducing the change. Every care must be taken to prevent blocking the process by actions damaging to the morale of the emerging researchers. The new role added to those traditionally played by the college requires certain changes. These changes are similar to those periodically encountered in industry and must be treated likewise-- a matter of course. Increasing productivity in industry depends on modifying the total man-machine system; that is, modernizing the facilities and updating the training of the personnel. Likewise, effecting research productivity depends on modifying the total system of the institution. A smooth transition to the desired conditions, however, is enhanced when common understanding of the desired changes and the role each member of the institution is to play in that process is achieved.

The Role of CORD

11. CORD attempted to assist in implementing this solution by providing interested members of the faculty with some of the necessary resources needed for developing their research skills; by providing the administration with a survey of the factors effecting research productivity; and by recommending to members of the administration regarding examples of policies which are considered effective in encouraging and rewarding research productivity.

12. But the CORD Program by itself, is an incomplete solution. CORD can survey the need. It can suggest solutions, and it can provide some resources. The real and lasting change, however, requires the concerted effort of all.

HANDBOOK OF POLICIES
AFFECTING FACULTY INVOLVEMENT IN
ORGANIZED RESEARCH

An Outline

This outline was developed by the coordinators of the CORD Program (Project 7-1015) with the objective of helping the participating colleges in studying and explaining the procedures affecting faculty involvement in research.

1. Introduction

    1.1 The Three Roles of Institutions of Higher Education

        1.1.1 Instruction
        1.1.2 Research
        1.1.3 Service

    1.2 The College as an Institution for Higher Education

        1.2.1 The Traditional Roles
        1.2.2 The Need for Change

2. Some Definitions

    2.1 Quality Instruction

    2.2 Research

    2.3 Service

3. Faculty Responsibilities and Priviledges

    3.1 Some Involvement in Research, Service, & Instruction are Expected of Every Faculty Member

    3.2 Except for Limitations Imposed by Resources, a Faculty Member is free within the law to study any Academic Topic he is qualified to investigate. (See the policies of the Board of Trustees of the State University of New York 1968, p.23)

4. The Pursuit of Research

    4.1 Availability of Local Funds

        4.1.1 Departmental
        4.1.2 Special Funds

4.2 University Wide Funds

4.2.1 Research Support
4.2.2 Faculty Fellowships
4.2.3 Distinguished

4.3 Outside Funding

4.3.1 Freedom of Faculty Member to make Informal Contacts
4.3.2 Assisting Agencies

4.3.2.1 Local Coordinator of Funded Programs
4.3.2.2 Dean of Graduate Studies & Research
4.3.2.3 The Research Foundation
4.3.2.4 The Washington Office of SUNY

5. Proposal Development and Local Review

5.1 Academic Freedom (within the boundaries of resources)

5.2 Informal discussion with

5.2.1 Chairman of Department - for purpose of getting preliminary information on possibility for time release, facilities
5.2.2 Coordinator of Research, Research Foundation for possible sources of funding

5.3 Importance of Adhering to Format of Funding Agency

5.4 Available Aids from the Research Foundation

5.5 Available Campus Agencies

5.6 Advisory Committee (voluntary) and agencies

Friendly review and help in proposal format, feedback on clarity, budget details, etc.

5.7 Final Review and Processing

(Office of Graduate Studies) Final Processing - normally routine unless unexpected new developments create restrictions

Concern of each

6. Personnel Policies

6.1 Reduction of Teaching Load

6.1.1 Essentially with organized research (Local or outside funding)

6.1.2 Not more than two preparations/semester and/3 year. A research project is considered as one preparation.

6.2 Completion of Project and Publishing Report

6.3 Quality before quantity of publication is the criterion for evaluation of faculty productivity

6.4 Relative merits of each role in determining faculty reward

List of the Issues Discussed in the Seminars

First Administrative Leaders' Seminar

Second Administrative Leaders' Seminar

Third Administrative Leaders' Seminar

1. First Administrative Leader's Seminar

A List of Issues
January 13, 1968

I. Encouraging Faculty Involvement in Research and Rewarding Research Productivity.

By tradition, small colleges have encouraged teaching and service as the main two roles for their faculty. If research is to be established as an added role, what could be done to encourage faculty members to engage in this new and sometimes unfamiliar role:

A. Should at least for a few years, a proportionally high system of reward be attached to research involvement? What kind?

B. Since a faculty member normally receives honoraria for outside consultantships, and since in education, inservice work is in constant demand for talent, further reward from the college does encourage faculty members to invest more of their time in such activities. How can reward for research involvement be made competitive with consultant-inservice work?

C. Should the policy of rewarding research involvement take into consideration the type of project? For example, should it differentiate between small and large contracts and/or grants.

D. How can the system of reward take into account the difference among types of publications and thus encourage scholarly research?

II. Procedures for local Review of Research Proposals

Two problems seem at issue in review of proposals: Namely (a) content review, dealing with the quality and nature of study, and (b) administrative review dealing with the degree to which the project obligates the institution in funds, facilities, or released faculty time.

A. Content Review

The issues in content review is to insure that the proposal is of quality, capable of reflecting a good image about the department and the institution. Two problems, however, arise in requiring a content review: (1) academic freedom, and (2) stealing of ideas. More specifically the questions involved include:

1. If a content review is desirable, should a departmental or an out-of-department committee be more beneficial in judging the quality of the proposal?

2. Should the role of the committee be an advisory one or judicial?
3. Should two faculty members propose two approaches to a development-research program, would the review committee have the role of selecting one or permit both to submit their proposals?

B. Administrative Review

1. To what extent would an administrative review committee be concerned with the content of the proposal? For example, should a faculty member propose to a problem related to the relationship of an institutional policy on student behavior, does the review committee have the right for some reason to object?

III. Problems of Faculty Load When Involved in Research

The general trend in small colleges tend to revolve around a teaching load of 4(3 hour courses) in small classes. In a few cases some consideration is given to the number of preparations. This situation raises a few issues when research involvement is considered.

A. In a small contract, a researcher might estimate the need for 15% time. But since most of the courses run in blocks of 3 hours, a reduction of one class involves the demand for 25% of his salary, a situation which might handicap the project, can the project be carried as an overload with some compensation to the researcher or should the college be ready to contribute the difference in cost?

B. How can a formula for reduced load take into account (a) the number of preparations involved, (b) the student load, (c) graduate and undergraduate courses, (d) time scheduling to allow blocks of time for research.

C. When in the process of applying for funds, should the committment of the institution for reduced load be made? And what happens if the proposal is not funded?

IV. Facilitating Application & Execution of Research

A. What procedures would be desirable to establish to aid in informing faculty of the availability of fundable programs?

B. What procedures would be desirable to establish to aid in obtaining references not available in the library with a minimum of delay?

D. In your experience, what type of information seems to be "universally" required in proposal writing which would be desirable to prepare in a standard form to be used by proposal writers on each campus.

Second Administrative Leader's Seminar

Second Administrative
Leader's Seminar

List of Issues

1. Encouraging faculty involvement in research and rewarding research productivity.
2. Procedures for local review of research proposals.
3. Problems of faculty load when involved in organized research.
4. Budgeting for departmental research.
5. Administrative procedures which facilitate research, such as:
    a. Allocation of computer time and technical help in the use of the computer.
    b. Developing leaflets carrying some of the standard information called for in research proposals such as the description of local programs, facilities and expenditures.

Third Administrative Leader's Seminar

Third Administrative Leaders' Seminar

March 13-14, 1969

Topics for Study

The seminar focuses on an examination of some of the procedures which enhance research productivity. First, it deals with the definition of the roles of higher education, the criteria for evaluating academic productivity and the anticipation and resolution of conflicts among the various roles. Second, it examines some administrative practices which are considered desirable in facilitating faculty involvement in research and in enhancing research productivity in general. Finally, it considers the development of "handbooks" to communicate to the faculty the procedures related to involvement in organized research which were adopted by each of the participating colleges.

Part I. THE FOUR PILLARS OF HIGHER EDUCATION DEFINITIONS, CONFLICTS, AND ASSESSMENTS

Edwin P. Hollander, Consultant

General Questions:

1. What is the relationship between instruction, service development, and research?
2. What threats does research involvement bring to the traditional structure of the college? (Examples include "maintaining quality instruction" , fostering close association between faculty and students and faculty loyalty to departmental needs.)
3. What measures of productivity can be used to encourage academic excellence in faculty publication and research?
4. What matters might constitute a source of trouble and require special attention during the process of change?
5. What roles can administrators play to encourage faculty involvement in research?

Part II. THE ADMINISTRATION OF RESEARCHERS: WAYS OF MAXIMIZING EFFICIENCY - James W. Colmey, Consultant

General Questions:

1. What sources of conflict tend to be frequent between the administrators and researchers?
2. In which way do the administrative problems connected with research differ from those connected with teaching?
3. What organizational practices tend to enhance the productivity of researchers?

Part III. HANDBOOK OF POLICIES AFFECTING FACULTY INVOLVEMENT IN ORGANIZED RESEARCH: AN OUTLINE

(Open Discussion)

1. The need for the handbook
2. Information to be included

APPENDIX F

EVALUATION DATA

1. The Semantic Differential Instrument
2. CORD Participant Survey - 1969
   (John Dodd and John Vasi)
3. CORD Participant Attitude Survey - 1970
   (Richard McCowan)

1. The Semantic Differential Instrument
    a. List of Concepts

College

Statistics

Proposal

Publication

University

Curriculum

Testing

Evaluation

Behavioral Objectives

Research

Objective Observation

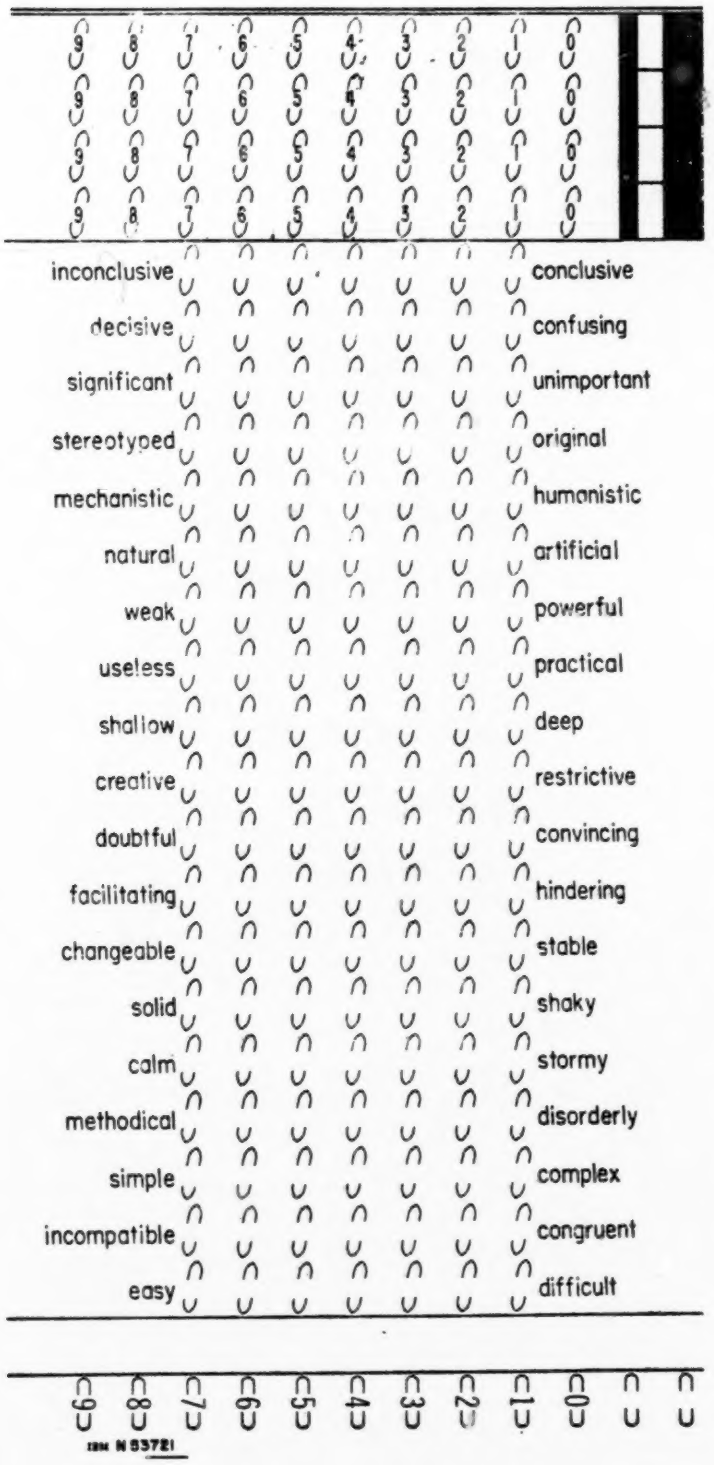
Teaching

Experimentation

Survey

1. List of Scales

[Mark sense cards format]



inconclusive	conclusive
decisive	confusing
significant	unimportant
stereotyped	original
mechanistic	humanistic
natural	artificial
weak	powerful
useless	practical
shallow	deep
creative	restrictive
doubtful	convincing
facilitating	hindering
changeable	stable
solid	shaky
calm	stormy
methodical	disorderly
simple	complex
incompatible	congruent
easy	difficult

C. INSTRUCTIONS

This study attempts to measure the meanings of certain things to various people by having them judge them against a series of descriptive scales. In giving your response, please *make your judgments on the basis of what these things mean to you.*

On each card in the envelope you will find a different concept to be judged and beneath it a set of scales. *You are to rate the concept on each of these scales in the order they are presented.*

Here is an example of how you are to use these scales:

If you feel that the word MAN is very closely related to one end of the scale, you should blacken either the first or the last bubble as it seems appropriate in either of the following ways:

fair ● 0 0 0 0 0 0 unfair OR fair 0 0 0 0 0 0 ● unfair

If you feel that MAN is quite closely, but not extremely, related to one end of the scale, you should blacken the bubbles as follows:

strong 0 ● 0 0 0 0 0 weak OR strong 0 0 0 0 0 ● 0 weak

If the concept seems only *slightly related to one side* as opposed to the other side *(but is not really neutral)*, then you should blacken the bubbles as follows:

active 0 0 ● 0 0 0 0 passive OR active 0 0 0 0 ● 0 0 passive

The direction toward which you check, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you're judging.

If you consider the *concept to be neutral* on the scale, both sides of the scale equally associated with the concept; or if the scale *is completely irrelevant,* unrelated to the concept, then you should blacken the bubble in the middle.

Safe 0 0 0 ● 0 0 0 dangerous

Sometimes you may feel as though you've had the same item before on the test. This will not be the case, so DO NOT look back and forth through the items. DO NOT try to remember how you checked similar items earlier in the test. Make each item a separate and independent judgment. Work at fairly high speed through this test. DO NOT worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.

All the information you give will be kept strictly confidential. For the sake of relating responses to other data, however, please supply the requested biographical data on the enclosed form.

Remember,

1. Be sure you check EVERY scale for EVERY concept - DO NOT OMIT ANY
2. Never put more than ONE check mark on a single scale.
3. Give each item a separate and independent judgment - your first but serious impression.
4. Complete the biographical data card.

ALL INFORMATION YOU GIVE WILL BE KEPT STRICTLY CONFIDENTIAL.

THANK YOU,

d. Analysis of Data on the Sematic Differential

The computer output on the factor analysis and the multivariate analysis of data on the Semantic Differential is on file at the State University College at Fredonia. Printing cost metigated against its inclusion in the report.

2. CORD Participants' Survey -1969

Instrument*

Summary Report

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* Tabulation of Responses (number of respondents and percentages) are recorded on the instrument on the left side of the individual items.

CORD Participants' Survey - 1969
(Dodd & Vasi)

Dear CORD Participant,

At this point we are considering the path CORD will follow for the rest of this year and next year. This questionaire will help us decide how future CORD sessions both on and off campus might be of best advantage to CORD participants.

While reasoned opinion was the only means available in planning the CORD program, we are anxious to base the future of the program on a broader understanding of your needs. As a result, we are soliciting your opinions on the matter. Please give us your frank and considered suggestions.

This questionnaire is intentionally not made anonymous for we hope it will help the staff of CORD to follow up the matter with a brief interview with some if conditions permit. However, we assure you that the information you give will be held confidential, as far as other individuals are concerned.

Please feel free to add comments at any point and return to your local development officer.

SURVEY QUESTIONS

Which off-campus workshop did you attend:

___ 1. Translating constructs into observable behavior (Oct. 1967)

___ 2. Measurement of criterion variable and microteaching as an observational technique for research (Feb. 1968)

___ 3. Designing a research study (May 1968)

___ 4. Translating theory into practice and testing the validity (Nov. 1968)

___ 5. None

If you have never attended a workshop answer only the questions in Group I and Group III. If you have attended any of the workshops, answer the questions in Group I, II and III.

No.*	%	
		Which off-campus workshop did you attend?
(8)	25	1. Translating constructs into observable behavior (Oct. 1967).
(10)	31	2. Measurement of criterion variable and microteaching as an observational technique for research (Feb. 1968).
(4)	13	3. Designing a research study (May 1968).
(11)	34	4. Translating theory into practice and testing the validity (Nov. 1968)
(8)	5	5. None

If you have never attended a workshop answer only the questions in Group I and III.
If you have attended any of the workshops, answer the questions in Groups I, II & III.

GROUP I

Of the following anticipated results of the CORD on-campus seminars, please check those which you feel were, for the most part, accomplished.

(8)	25	1. Developed your research skills
(19)	59	2. Motivated you to engage in research
(11)	34	3. Interested you in making greater use of research findings.
(9)	28	4. Furnished you with ideas for classroom presentation.
(4)	13	5. Equipped you to carry out instructional research on your classes
(17)	53	6. Furnished you with ideas for research activities.
(13)	41%	7. Assisted you in implementing a research idea.
(4)	13	8. Provided technical assistance on designing a study.
(3)	9	9. Other (If there have been other benefits not listed that you may wish to add, do so in this space).

I believe there should be more emphasis at local seminars on:

(7)	22	utilizing statistical analysis skills.
(12)	38	preparing a proposal.
(16)	50	determining "researchability" of a question.
(10)	31	locating research funds.
(8)	25	acquiring computer "know how."

No.	%	
(3)	9	developing unique measurement devices.
(16)	50	determining areas of research need.
(19)	59	discussing feasibility of research ideas.
(1)	3	improving technical writing skills.
(5)	16	utilizing non-parametric statistics.
(6)	19	utilizing inferential statistics.
(3)	9	utilizing descriptive statistics.
(7)	22	studying sampling procedures.
(20)	63	developing appropriate experimental design.

GROUP II

Check the workshops you attended which were most beneficial:

(8)	30	1. Translating Constructs Into Observable Behavior (Oct. 1967).
(7)	26	2. Measurement of Criterion Variables and Microteaching as an Observational Technique for Research (Feb. 1968).
(3)	11	3. Designing a Research Study (May 1968).
(2)	7	4. Translating Theory into Practice & Testing the Validity (Nov. 1968).

Check which of the following topics you would like a future workshop to deal with:

(3)	11	1. Analysis and Review of Literature.
(8)	30	2. Development of a Testable Hypothesis From a Hunch or Idea.
(14)	52	3. How to Use Statisticians and Other Technical Assistance as a Resource.
(15)	56	4. Models of Some Research Designs.
(5)	19	5. Selection of Samples.
(5)	19	6. Selection of Measurement Instruments.
(7)	15	7. Drawing Conclusions From Evidence.

Check each of the following anticipated results of the CORD workshops that you feel were accomplished:

(6)	22	1. Developed your skill in research.
(10)	37	2. Motivated you to engage in research.

No.	%	
(5)	19	3. Furnished you with ideas for classroom presentation.
(2)	7	4. Equipped you to carry out instructional research on your classroom teaching.
(8)	30	5. Furnished you with ideas for research projects.
(0)	0	6. Furnished credit for workshop attendance for points toward salary increase.
(10)	37	7. Distraction-free opportunity for study.
(13)	48	8. Opportunity for exchange of ideas from other institutions.
(3)	11	9. Other (If there have been other benefits not listed that you may wish to add, do so in this space).

GROUP III

(All persons answer please). Check the items below which you feel would best supplement the presently available resources for research on your campus.

(21)	66	1.	Provide graduate assistants for faculty members involved in research.
(17)	53	2.	Increase travel money to permit more professional participation.
(10)	31	3.	Provide funds for publication costs.
(17)	53	4.	Make available statistical consultants.
(15)	47	5.	Make available computer consultants.
(10)	31	6.	Make available graphic artists to prepare graphic material for publication.
(12)	38	7.	Make available consultants for budgetary matters on grants.
(9)	28	8.	Make available consultants on funding agents.
(20)	63	9.	Provide released time for faculty members involved in research.
(10)	31	10.	Establish promotion procedures which would reward research commensurate with the effort required.
(14)	44	11.	Provide funds for special equipment required to carry out research.
(24)	75	12.	Provide secretarial service for typing manuscripts and proposals.
(6)	19	13.	Other

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*The total number of respondents for Group I and III was 32, and for Group II was 27.

CORD PARTICIPANTS' SURVEY: SUMMARY REPORT

John M. Dodd and John J. Vasi

In an attempt to obtain feedback and to better plan for another year's CORD program, a questionnaire was sent to all faculty who have expressed interest at one time or another in the activities of CORD. The questionnaires asked which CORD events the respondent had attended, how beneficial these were, and what might be offered in the future to best benefit the participants. Questions dealt equally with both the off-campus workshops and the faculty seminars.

The first set of questions in Group I dealt with the anticipated results of the on-campus seminars. Replies indicated that the two most positive achievements of these seminars were that they motivated participants to engage in research and also that they furnished ideas for possible research projects. A majority of those responding indicated that such ideas were supplied. The second set of answers in Group I attempted to assess what areas should be emphasized at seminars in the future. Four of the questions showed a majority agreeing. All of these dealt with one area - the initial choice of a research question and how to expand this initial idea. Determining areas of research need determining researchability and feasibility for a specific topic, and developing appropriate research design were the four areas of greatest interest for future seminars.

The questions in Group II dealt with the off-campus workshops. In the first set of questions, which attempted to determine which workshop was thought to be the most beneficial, there were really no clear-cut favored choices.

The most popular topic for future workshops seemed to be one which would deal with actual models for research - specific models of research design which might be a synthesis of much of the information of previous workshops and seminars.

Another set of questions dealt with the results of the workshops. Opinion varied a great deal, and the returns indicated there was no area which seemed to be especially higher than another. Of the possible choices listed, the one selected most frequently was the one concerning exchanging ideas with persons from other institutions, a choice removed from the subject matter of the workshops.

The questions in Group III assessed the presently available resources on the individual campuses. The choices offered suggestions which might best supplement such resources. The most popular items were providing secretarial services, providing graduate assistants, providing release time for research, and making available statistical consultants.

Generally, the results seemed to indicate that CORD seemed to be in tune with the desires of the participants. What was wanted most was a method for deciding on what areas were worthwhile for research. The respondents agreed that the major accomplishment of CORD had been to furnish such ideas as well as motivate the participants to engage in such research. The results, however, showed that the seminars were beneficial in both areas than the workshops. What was pointed up, though, was the desire to have a future workshop deal with some concrete example of research design.

It is difficult to assess the role of CORD in providing aids to research on the individual campuses. Although areas of high agreement were listed in the discussion above, almost all of the possible suggestions for improving facilities on campus were checked fairly heavily. Obviously, there is a great need in many areas. The participants indicated that the most immediate needs seemed to be to provide manpower to do some of the menial work involved in research projects.

C. CORD Participant Attitude Survey - 1970
(conducted by R. McCowan)

Instrument

Tabulation of Responses

CONSORTIUM ON RESEARCH DEVELOPMENT

Participants' Attitude Survey
1970

Part I

The purpose of this survey is to determine the value of the 1969-1970 CORD activities. For each item of the survey you will find a different concept to be judged and beneath it a set of scales. Please rate the concept on each of the scales in order.

The scales are to be rated in the following manner:

If you feel that the particular concept is VERY CLOSELY RELATED to one end of the scale, you should place your mark as follows:

orderly (1) 2 3 4 5 chaotic

or

orderly 1 2 3 4 (5) chaotic

If you feel that the particular concept is CLOSELY RELATED to one end of the scale, you should place your mark as follows:

orderly 1 (2) 3 4 5 chaotic

or

orderly 1 2 3 (4) 5 chaotic

If you consider the concept to be NEUTRAL on the scale, both sides of the scale EQUALLY ASSOCIATED with the concept, or if the scale is COMPLETELY IRRELEVANT, unrelated to the concept, then you should place your mark in the middle space:

orderly 1 2 (3) 4 5 chaotic

Be sure you mark every scale for every concept.

Never put more than one mark on a single scale.

A. The off-campus workshops were

1.	useful	1	2	3	4	5	useless
2.	important	1	2	3	4	5	unimportant
3.	impractical	1	2	3	4	5	practical
4.	meaningful	1	2	3	4	5	meaningless
5.	unpleasant	1	2	3	4	5	pleasant
6.	dull	1	2	3	4	5	stimulating
7.	relevant	1	2	3	4	5	irrelevant

B. In terms of developing my research skills the local seminars were

8.	useful	1	2	3	4	5	useless
9.	important	1	2	3	4	5	unimportant
10.	impractical	1	2	3	4	5	practical
11.	meaningful	1	2	3	4	5	meaningless
12.	unpleasant	1	2	3	4	5	pleasant
13.	dull	1	2	3	4	5	stimulating
14.	relevant	1	2	3	4	5	irrelevant

C. In terms of motivation to carryout research the local seminars were

15.	useful	1	2	3	4	5	useless
16.	important	1	2	3	4	5	unimportant
17.	impractical	1	2	3	4	5	practical
18.	meaningful	1	2	3	4	5	meaningless
19.	unpleasant	1	2	3	4	5	pleasant
20.	dull	1	2	3	4	5	stimulating
21.	relevant	1	2	3	4	5	irrelevant

D. In terms of furnishing ideas the local CORD activities were

22.	useful	1	2	3	4	5	useless
23.	important	1	2	3	4	5	unimportant
24.	impractical	1	2	3	4	5	practical
25.	meaningful	1	2	3	4	5	meaningless
26.	unpleasant	1	2	3	4	5	pleasant
27.	dull	1	2	3	4	5	stimulating
28.	relevant	1	2	3	4	5	irrelevant

E. In terms of determining the "researchability" of a question local CORD activities were

29.	useful	1	2	3	4	5	useless
30.	important	1	2	3	4	5	unimportant
31.	impractical	1	2	3	4	5	practical
32.	meaningful	1	2	3	4	5	meaningless
33.	unpleasant	1	2	3	4	5	pleasant
34.	dull	1	2	3	4	5	stimulating
35.	relevant	1	2	3	4	5	irrelevant

F. In terms of developing appropriate experimental design local work activities were

36.	useful	1	2	3	4	5	useless
37.	important	1	2	3	4	5	unimportant
38.	impractical	1	2	3	4	5	practical
39.	meaningful	1	2	3	4	5	meaningless
40.	unpleasant	1	2	3	4	5	pleasant
41.	dull	1	2	3	4	5	stimulating
42.	relevant	1	2	3	4	5	irrelevant

G. The individual consultation offered on this campus was

43.	useful	1	2	3	4	5	useless
44.	important	1	2	3	4	5	unimportant
45.	impractical	1	2	3	4	5	practical
46.	meaningful	1	2	3	4	5	meaningless
47.	unpleasant	1	2	3	4	5	pleasant
48.	dull	1	2	3	4	5	stimulating
49.	relevant	1	2	3	4	5	irrelevant

H. In terms of assistance in the implementation of research ideas local activities were

50.	useful	1	2	3	4	5	useless
51.	important	1	2	3	4	5	unimportant
52.	impractical	1	2	3	4	5	practical
53.	meaningful	1	2	3	4	5	meaningless
54.	unpleasant	1	2	3	4	5	pleasant
55.	dull	1	2	3	4	5	stimulating
56.	relevant	1	2	3	4	5	irrelevant

I. In terms of improving technical writing skills local activities were

57.	useful	1	2	3	4	5	useless
58.	important	1	2	3	4	5	unimportant
59.	impractical	1	2	3	4	5	practical
60.	meaningful	1	2	3	4	5	meaningless
61.	unpleasant	1	2	3	4	5	pleasant
62.	dull	1	2	3	4	5	stimulating
63.	relevant	1	2	3	4	5	irrelevant

J. In terms of developing unique measuring devices local activities were

64.	useful	1	2	3	4	5	useless
65.	important	1	2	3	4	5	unimportant
66.	impractical	1	2	3	4	5	practical
67.	meaningful	1	2	3	4	5	meaningless
68.	unpleasant	1	2	3	4	5	pleasant
69.	dull	1	2	3	4	5	stimulating
70.	relevant	1	2	3	4	5	irrelevant

K. In terms of utilizing statistical techniques local activities were

71.	useful	1	2	3	4	5	useless
72.	important	1	2	3	4	5	unimportant
73.	impractical	1	2	3	4	5	practical
74.	meaningful	1	2	3	4	5	meaningless
75.	unpleasant	1	2	3	4	5	pleasant
76.	dull	1	2	3	4	5	stimulating
77.	relevant	1	2	3	4	5	irrelevant

Part II

The following objectives could have been attained from your participation in CORD activities. Please indicate the extent to which each objective was attained by circling a number "1" (low degree) through "5" (high degree).

1. Developed your skill in research techniques 1 2 3 4 5
2. Motivated you to engage in research 1 2 3 4 5
3. Furnished you with ideas for classroom presentations 1 2 3 4 5
4. Improved your ability to use statistics 1 2 3 4 5
5. Enabled you to identify research problems 1 2 3 4 5
6. Furnished an opportunity to discuss research projects with other faculty members 1 2 3 4 5
7. Gave an opportunity to exchange ideas with faculty from other institutions 1 2 3 4 5
8. Offered credit for promotion or merit salary increases 1 2 3 4 5
9. Presented an opportunity for additional study 1 2 3 4 5
10. Provided technical assistance in designing a study 1 2 3 4 5
11. Enabled you to identify sources of research funds 1 2 3 4 5
12. Improved technical writing skills 1 2 3 4 5
13. Other (please list)

Part III

Circle a number from "1" (unimportant) to "5" (very important) to indicate the degree of importance you would assign to each of the following services, if adequate funds were available.

1.	Graduate assistants	1	2	3	4	5
2.	Professional travel	1	2	3	4	5
3.	Publication costs	1	2	3	4	5
4.	Statistical, experimental design or computer consultants	1	2	3	4	5
5.	Consultants on funding agencies or budgetary matters	1	2	3	4	5
6.	Other educational consultants	1	2	3	4	5
7.	Graphic artists to design materials for instruction or publication	1	2	3	4	5
8.	Released time for faculty involved in research	1	2	3	4	5
9.	Special equipment or materials	1	2	3	4	5
10.	Secretarial service	1	2	3	4	5
11.	Other (please specify)					

TABULATION OF RESPONSES (PART I)

MEAN RATINGS OF OBJECTIVES

Scale	Mean Rating of Objectives**										
	A	B	C	D	E	F	G	H	I	J	K
Useless-Useful*	3.41	3.22	3.29	3.25	3.19	3.19	3.54	3.35	2.88	2.70	2.97
Unimportant-Important*	3.41	3.13	3.16	2.91	3.07	2.97	3.15	3.10	2.78	2.67	2.77
Impractical-Practical	4.03	4.19	4.15	4.06	4.09	4.06	4.37	4.15	3.83	3.80	3.96
Meaningless-Meaningful*	3.26	3.07	3.07	2.94	2.94	3.07	3.22	3.07	2.55	2.76	2.64
Unpleasant-Pleasant	4.15	4.06	4.03	3.96	3.81	3.81	4.32	3.51	3.56	3.57	3.51
Dull-Stimulating	4.11	4.10	4.13	3.96	3.78	4.12	4.34	4.00	3.77	3.48	3.66
Irrelevant-Relevant*	3.08	3.10	3.10	2.50	3.10	3.04	3.29	3.13	2.78	2.66	2.84

*Polarity of scale reversed from original survey
**Neutral point = 3.0

Tabulation of Responses Part II

RATINGS OF ATTAINED OBJECTIVES

Objective	M	SD
1. Developed your skills in research techniques	3.45	.83
2. Motivated you to engage in research	4.03	.91
3. Furnished you with ideas for classroom presentations	3.51	1.06
4. Improved your ability to use statistics	3.00	.93
5. Enabled you to identify research problems	4.03	1.04
6. Furnished an opportunity to discuss research projects with other faculty members	4.36	.96
7. Gave an opportunity to exchange ideas with faculty from other institutions	4.21	.87
8. Offered credit for promotion or merit salary increases	1.96	1.27
9. Presented an opportunity for additional study	3.78	1.05
10. Provided technical assistance in designing a study	3.75	1.19
11. Enabled you to identify sources of research funds	3.69	1.31
12. Improved technical writing skills	3.00	1.23

Tabulation of Responses Part III

RATINGS OF SERVICES

	Service	M	SD
1.	Graduate assistants	4.29	.95
2.	Professional travel	3.97	1.16
3.	Publication costs	3.69	1.17
4.	Statistical, experimental design or computer consultants	4.32	.99
5.	Consultants on funding agencies or budgetary matters	3.88	1.19
6.	Other educational consultants	3.52	1.25
7.	Graphic artists to design materials for instruction or publication	3.47	1.08
8.	Released time for faculty involved in research	4.42	.99
9.	Special equipment or materials	3.85	1.07
10.	Secretarial service	4.35	.98